water broke under and some 120 feet of the gate rose from its place and floated downstream a hopeless and unrecognizable wreck, and lodging some distance below. Thus ended the fifth attempt.

The best previous practice seeming to be useless in endeavoring to cope with the Colorado River, Col. Randolph and his assistants determined to conquer the river the next time by main strength. Three lines of trestle, each to carry a railroad track, were projected across the breach, parallel with each other, and preparations were made to dump vast quantities of rock, as large and as heavy as could be obtained, and make three rockfill or cascade dams, one parallel with the other across the bypass opening, thus throwing the water across the larger opening of the old dam or break. Every facility and resource of the great Southern Pacific Railroad was now utilized; every quarry within 400 miles was requisitioned; and some 200 carloads of rock were rushed in and dumped into the break daily. This work began on November 24, and in twenty-one days every drop of water was cut off and the water was forced down the old channel of the Colorado River where it belonged, and the break was closed. Meanwhile the needs of the Imperial Valley were taken care of by water passed through the new concrete headgate, and apparently the Colorado River had capitulated and surrendered to engineering skill and man's authority.

The Colorado, however, was equal to another insurrection. It made an attack below this dam, which held its own, but broke through the levee below; turned around behind it; cut it away and part of the dam from the back; and, within a few weeks, all previous efforts had been set at naught, and the entire body of the river was flowing unimpeded into the Salton Sink through an opening about two-thirds of a mile in width.

The seventh attempt at closure was begun in earnest on January 27. Three lines of trestles, resting on piles 65 to 90 feet in length, were built across the break with much difficulty, a portion of one of these trestles being swept away three times. Indeed, it was found necessary to weight the piles down with water tanks to keep them from being carried away.

In the sixth attempt at closure, 2,200 cords of brush and three-fourths of a mile of railway, over 1,000 piles, and some 200,000 yards of rock and gravel and other material were used. But the last contest was still more severe, calling for the services of 375 Indians, 400 Mexicans, and 500 white men, seven locomotives and a steamboat, and dredges; also 100,000 cubic yards of rock and 75,000 yards of clay and gravel were hauled out on these trestles and dumped overboard; thus making a cascade dam; raising the level of the river some 12 feet, and throwing it back into its old channel, into which it began to flow about February 26. After so many unsuccessful attempts, the question still remains, "Will this closure be permanent?"

Advices received by the writer from Mr. Randolph on April 2 advise that "the new work and the new levees have stood a 27-foot stage of water in the Colorado River." He writes that the muck ditches have proven effective in preventing the water from passing under the levees; but he says this may not be the condition when there is a maximum of 33 feet on the Yuma gage, though he believes that the levees will prove effective, even against this height.

The writer considers that in overcoming the Colorado River, Col. Epes Randolph and his able assistant, Mr. H. T. Cory, have won one of the greatest engineering victories and performed one of the most remarkable and difficult engineering feats ever accomplished, and that engineering is the richer for their demonstration of the efficiency of the cascade dam for controlling obstreperous rivers. He considers further that the people of Mexico, California, and Arizona, if not of the nation, owe many thanks to the Southern Pacific Railroad for taking hold of a bankrupt enterprise and furnishing men, money, and physical equipment and saving such large and important vested and property interests.

THE JAPANESE SQUADRON AT JAMESTOWN.

(*Continued from page 373.*)

partures, ammunition passages have been dispensed with and a new arrangement has been made instead, special ammunition hoists being provided for the 12-inch guns. The forward conning-tower has no side entrance at the back of its wall, but is entered from the upper bridge through a trap-door on the roof of the tower. There are smaller conning towers also over the 6-inch guns on the upper and main decks to control the gun fire. Her great width, which is 75 feet, was probably a record in cruiser construction at the time she was designed. The "Tsukuba" is the first cruiser ever equipped with 12-inch guns, of which she has four—two in the forward and two in the after barbettes on the upper deck. Besides, the ship carries twelve 6-inch quick-firing guns, an equal number of 4.7-inch quick-firers, two 12-pounders, and four Maxims. She can bring four 12-inch guns, six 6-inch guns, and six 4.7-inch guns to bear in broadside fire. As to the fore fire, the cruiser can most effectively train two 12-inch guns, four 6-inch guns, and four 4.7-inch guns.

Although no official statement of her steam and gun trials has been given to the public, this much is absolutely certain, that not only was everything satisfactory but in some important respects the results of the trials exceeded expectations. Her maneuvering power is said to have proved exceptionally good, the ease with which she was steered and handled to have been very remarkable, and even the rough weather which she experienced at the time failed to make her roll to any perceptible degree. In all her gun trials the results were, according to accounts, all that could have been desired.

A correspondent on board one of the ships writing to the Jiji-Shimpo under date of the 2d instant says: "Although we encountered very rough weather on the day we left Yokohama, the behavior of the 'Tsukuba' was splendid and she neither rolled nor pitched in the slightest degree."

Vice-Admiral Ijuin, commander-in-chief of the Celebration Squadron, sprang from the warlike clan of Satsuma, which produced Saigo, Okubo, Togo, and many other heroes. He was born in 1852 and took part in the War of the Restoration when he was quite young. In 1871 the vice-admiral attended the Naval College, Tokio, and six years later he was sent to England to prosecute his naval studies. While there he served on board the British warship "Triumph" and was also admitted to the Greenwich College. In the time of the Japan-China war, the vice-admiral was a captain and held the post of naval staff officer at the imperial headquarters. In March, 1902, he was appointed commander of the Standing Squadron, and was sent to England in command of the "Asama" and the "Takasago" to participate in the ceremonies in connection with the coronation of King Edward. In September, 1903, he was promoted to the rank he now holds and appointed vice-chief of the Naval Staff Office under Admiral Viscount Ito. During the Russo-Japanese war, he was put on the naval staff of the imperial headquarters and took part in its councils, doing distinguished services to the state, for which he was awarded the first-class order of the Golden Kite with the Grand Cordon of the Rising Sun. In November last the vice-admiral was transferred to his present post of commander-in-chief of the Second Squadron. He is the inventor of a special fuse, which made possible the use of the Shimose explosive. During the late war, Capt. Takenouchi, commander of the "Tsukuba," commanded the "Nisshin," and Capt. Yamaya, commander of the "Chitose," commanded first the "Akitsushima" and then the "Kasagi," both rendering meritorious services which were duly recognized. The crews of the two cruisers are most of them men who took part in the war.

According to the itinerary already published, the squadron is expected to arrive at Jamestown on May 8 and to stay there for about twenty days, after which it will visit New York, London, Wilhelmshafen, and Cherbourg. The warships will return to Yokohama in November.

RECENTLY PATENTED INVENTIONS.

Pertaining to Apparel.

SLEEVE-HOLDER.—HERMINIA M. M. BARNES, Ludlow, England. This device maintains short or elbow sleeves in place when putting on an outer garment. The sleeve is bindingly held to the arm by an elastic tape having a ring secured at each end thereof, with one end of the tape passing through one of the rings to form a loop by which the sleeve is embraced about the arm and the other ring serving as a means to be passed over the thumb or finger for maintaining the holder in operative position.

BOW-NECKTIE.—W. A. CLARKE, East Ham, London, England. The more particular object in this case is to produce a "bow-necktie" provided with means whereby it may be fastened upon the outer flaps of a turn-down collar. One advantage of the tie is that persons of different tastes may mount it in different positions relatively to the collar.

Electrical Devices.

SECONDARY-BATTERY PLATE AND METHOD OF MAKING SAME.—L. N. J. ROSELLI, 14 Rue de la Fidélité, Paris, France. The invention consists, broadly, in forming by fusion, casting, and molding a core of active material and in casting around this core a support presenting the form of a grid with multiplying ramifications, this support being cast in a mold the core of which is constituted by the core of active material itself, which, as indicated, has previously been cast.

TROLLEY STAND AND POLE.—G. Q. SEAMAN, New York, N. Y. This trolley-stand will operate automatically to depress the trolley-pole in case the trolley-wheel becomes displaced from the wire, the general purpose being to prevent injury to guy-ropes or overhead construction. Means are provided for mounting the trolley-wheel which will enable it to be detached readily by the overhead construction in case it becomes fouled therewith. In this way the dislocation of the pole from the stand is prevented.

Of Interest to Farmers.

PNEUMATIC COTTON-HARVESTER.—J. E. WORSWICK, Montgomery, Ala. This picking-machine is of novel construction and arrangement of picking-nozzles, and of novel construction and arrangement of the receiving-chamber with provision for drying wet cotton and removing sand and dirt and condensed water and in the novel construction and arrangement of suction and blowing fans in connection with a motor, and in the novel construction and arrangement of a ventilated storage-receptacle and its accessories.

THRESHER-FEEDER.—T. N. JOHNSEN, Clark, Wash. Straw is carried to the machine and lifted into the hopper. Straw is dropped onto the hoe-down by forks. Rollers tear the bunches apart, throwing them out on endless carriers in the hopper sides, which deliver them through the opening in the bottom of the hopper onto an endless carrier, thence to the draper and to the machine. By means of a swinging-frame the feed of the same carrier to the draper is regulated, since the adjacent run of the carrier on the frame and former carrier move oppositely, and by swinging the frame nearer or farther from the same the layer of straw delivered may be nicely regulated.

ROOT AND STALK PULLING MACHINE.—J. L. ANDERS, Pittsbridge, Texas. In this patent the invention relates to implements for clearing the earth of stalks, roots, vines, etc. The object of the invention is to produce an implement which will be drawn along by horses and which may be easily operated by the driver, so as to dig roots or stalks from the ground.

Of General Interest.

LIFE-RAFT.—P. C. PETRIE, New York, N. Y. The essential object of this invention is to provide a practically indestructible life-raft with a maximum passenger-carrying capacity proportionate to its size. These rafts may be fitted for use on seagoing craft by supplying them with lockers for the necessary stores of food, water, signals, etc. Mr. Petrie finds "Palo de balsa" the wood best adapted for the raft.

TIMBER-CUTTING DEVICE.—E. C. POLLARD, Seattle, Wash. This device is for use in cutting timber by burning a well-defined kerf through the log or tree. The invention more particularly relates to means for directing a blast of air to promote combustion and for preventing the timber from burning at other points than those required for severing it.

PROCESS OF MAKING HYDRAULIC CEMENT.—E. MUELLER, Alsen, N. Y. The process consists in mixing together pulverized coal and a pulverized flux and feeding the mixture simultaneously into the kiln for calcining the cement clinker, the admixture of flux with the coal and its diffusion and immediate action throughout the kiln serving to calcine the cement at a lower temperature and in a shorter time.

Hardware.

NUT-LOCK.—G. W. ROBERTS, Minersville, Pa. The object of the invention is to provide a nut-lock for securely locking the nut in place after it is screwed up and to allow convenient unscrewing of the nut whenever it is desired to do so and without destroying any of the parts, thus permitting free use of the bolt, nut, and lock.

SAFETY-LOCK.—J. E. LEDFORD, Butte, Mont. In this patent the invention has reference to locks—such, for instance, as are used upon doors, windows, and analogous closure members—Mr. Ledford's more particular object being to provide a lock with means for preventing its being picked or actuated surreptitiously.

CLASP.—O. FISHER, Sloan, Iowa. In this case the invention is an improvement in clasps, more especially designed as a means for holding the sections of stovepipes together, although not limited to this particular use, as it may be employed with advantage in other relations, where a safe, strong, and durable clasp is desired.

FARRIER'S KNIFE.—D. R. BALDWIN, Ravenden Springs, Ark. This patentee's improvement, generally stated, consists in a thin double-cutting-edged paring-blade adapted to be pivotally attached at the bottom of an animal's hoof and positively held in adjusted relation thereto as it is swung on its pivotal connection to remove the outer surface.

Household Utilities.

CREAM-SEPARATOR.—S. W. STEWART, Spencer, Ind. The invention is a novel device for separating the cream that rises to the upper surface of milk, and is especially designed for drawing off the cream that collects at the top of milk-bottles, as delivered for family use, thus adapting it for a household convenience and desirable kitchen article.

WASHING-MACHINE.—J. W. SEIFERT, East Point, Ga. The machine is of that type employing a revolving drum in which the clothes are placed, and the patentee constructs the drum with certain special features designed to give increased efficiency. The hinged cover of the machine and the revolving drum are so arranged in connection with a pivoted lever that the latter may be shifted so that the cover is raised and the drum lifted from the machine and caused to move outward and be supported on the lever.

Machines and Mechanical Devices.

CONDUIT-TRAVELER.—L. D. SHAFFER, Paint Borough, Pa. In this case the machine is adapted for drawing heavy cables through conduits. The invention provides means for withdrawing or slightly retracting the entire wiring machine when desired, as it sometimes happens in using the device in a conduit that something gets out of order or an unusual obstruction is met with and it is desired to withdraw the machine.

LINE-CARRIER.—L. D. SHAFFER, Paint Borough, Pa. In the present patent the invention is an improvement in line-carriers, especially designed for use in stringing wires after the first wire has been strung, as well as for carrying wires, lines, and the like across an intervening space having a wire for supporting the device.

Railways and Their Accessories.

APPLIANCE FOR SHIFTING THE POINT OF APPLICATION OF THE WEIGHT ON THE TRUCKS OF CARS AND THE LIKE.—P. STEFFEE, Missoula, Mont. The invention is for the purpose of bringing the entire weight of the car body to bear on the driven wheels of the car truck or those wheels to which power is first applied in putting the car in motion. By this arrangement of means the traction of the driven wheel will be increased, thereby avoiding slipping and enabling the car to be started without delay. Using this appliance materially decreases the weight of the car-body and sanding the track will be seldom required.

RAILWAY SAFETY APPARATUS.—G. E. RYAN, New York, N. Y. The improvement refers to safety appliances or apparatus, and is intended to be used upon railways to prevent collisions. The arrangement is such that the

apparatus will operate to prevent head-on as well as rear-end collisions, and the devices employed are entirely automatic in their operation.

CAR-RAIL AND BED.—R. JACKSON, Kennett Square, Pa. The objects in this case are to provide a rail having the maximum amount of wearing surface for the minimum weight, and to provide a rail bed which is not subject to decay and to which the form of rail may be readily applied. A further object is to provide a rail and bed in which additional parts for securing the ends of the rails together are unnecessary and in which only ordinary fastenings need be applied at the ends or into intermediate portions of the rail.

RAIL-JOINT.—J. C. ABBOTT, Pittsburg, Pa. The object of the invention is to provide railroad rails with an improved form of joint whereby their meeting ends are firmly yet detachably connected without the use of fishplates and bolts or other form of fastening independent of the rails themselves. The joint may be cheaply produced for manufacture.

Pertaining to Vehicles.

DUMPING-WAGON.—R. A. SHOWERS, Shenandoah, Iowa. The objects among others in this invention, are to provide a wagon operated by the driver without shifting his position to carry the body of the wagon, together with its load, rearwardly and inclinedly rest it at the required point of discharge; also to provide means for releasing and unlocking the tail-gate of the wagon from the driver's seat.

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.

Notes and Queries.

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

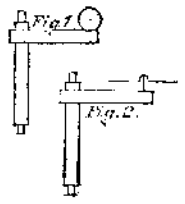
Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(10518) A. H. C. asks: I have a small dynamo—12-volt—which runs easy enough when the current is open, but as soon as the current is closed it runs so hard as to be nearly impossible to keep in motion. I suppose this is due to magnetic attraction. Can you suggest a remedy? A. Your dynamo is all right. It ought to run hard when doing work. When no current is flowing, there is no resistance to motion, and of course the shaft turns with ease. No current is being generated. When current is being used, work must be done to furnish the current. The power required to light ten 16-candle-power lamps is equal to that of one horse. A man might be able to furnish a tenth as much for a while. You only say that your dynamo current has 12 volts pressure. This does not tell anything about the current. Had you also given the amperes, we could have given you the power needed to drive the machine at full speed.

(10519) D. H. asks: If a convex piece of ice could be frozen clear enough, not to scatter the rays of the sun, so as to come to a focus, will not the ice produce the same effect as a sun glass? If so, if some material that will ignite where the rays of light focus, is not the heat produced by the gathering and focusing of the rays produced by the convex surface caused by the sudden stopping of the rays, or do the heat rays actually pass through the ice? If the theory is void that the heat of the sun is produced by the stopping of the rays when they strike the earth, why would not the heat be spent by passing through the atmosphere before they reach the earth? A holds that heat from the sun is produced by the stopping of the rays of light. B holds that the rays give off the heat as it passes through the atmosphere. Which, if either, theory is correct? If neither is correct, will you please state correct theory, as to how the heat is given off. A. If a lens, or sun glass, as you call it, were made of ice, it would bring the rays of the sun to a focus, and the focus would be hot just as it is when a lens of glass is used. Lenses of ice have frequently been made. The heat rays of the sun pass readily through ice and glass, just as they do through the air. How could the air of a room be warmed by the sun, if the heat of the sun did not pass through the glass of the windows? Nor is the heat, which we can so easily feel when the sun shines upon us, lost in the air or in the space between us and the sun. The atmosphere of the earth absorbs a part of the heat of the sun, but the greater part comes through to the surface of the earth and warms it. The heat of the sun is produced in the sun, and comes to the earth from the sun. The earth stops the rays, or waves, as they would better be called and makes them sensible to our nerves. It is true that the heat of the sun would not be felt here, if there were no earth for them to strike. The rays would go on till they found something to intercept them, before they could be made evident or manifest.

(10520) W. M. B. writes: It seems to me that in your reply to Query No. 10424 you ought not to say that the moon *revolves on its own axis*. Of course, it is only a question of the proper *expression*, as everyone is agreed as to the facts. It would be just as proper to say that the Flatiron building in New York revolves on its own axis as to say that the moon does. Both would appear to revolve in precisely the same way if seen from some point in space. The *axes* of *both* revolutions are the center of the earth. But of course if your statement is correct, I shall have to admit that my head revolves on its own axis, which may account for my waking up some morning with a lame neck. A. Several esteemed correspondents have taken exception to the statement that the moon rotates on its own axis. One has written us four letters on the matter. We make an additional note on the subject. No, it is not proper to say that the moon *revolves* on its own axis; nor did we say that it did. The friend of our correspondent who sent in the question said it in the words quoted, and we cannot be held responsible for that. *Revolve* is strictly limited in astronomy to the motion of a heavenly body in an orbit. The earth revolves around the sun. *Rotate* is limited to a motion around an axis. The moon rotates on its axis. Our correspondents who object to our answer do not seem to know the usage of these words in astronomy. Now, a final word on the subject. The sun rises on every point of the moon, passes over the planet, and sets once a lunar month, just as it does on the earth every day. If this does not show a rotation on an axis respecting the sun and all outside space, we fail to understand simple motions. We will quote an authority than whom there is no



higher, Prof. C. A. Young, "College Astronomy," "Rotation of the Moon," Sect. 248: "The moon rotates on its axis once a month, in precisely the same time as that occupied by its revolution around the earth. In the long run it therefore keeps the same face toward the earth. It is difficult for some to see why a motion of this sort should be considered a rotation of the moon, since it is essentially like the motion of a ball carried on a revolving crank. See Fig. 1. Such a ball, they say, *revolves* around the shaft, but does not *rotate* on its own axis. It does rotate, however. The shaft being vertical and the crank horizontal, suppose that a compass needle be substituted for the ball, as in Fig. 2. The pivot turns underneath it as the crank whirls, but the compass needle does not rotate, maintaining always its own direction with its marked end north. On the other hand, if we mark one side of the ball in Fig. 1, we shall find the marked side presented successively to every point of the compass as the crank revolves, so that the ball as really turns on its own axis as if it were whirling upon a pin fastened to a table. The ball has two distinct motions by virtue of its connection with the crank: first, the motion of translation, which carries its center of gravity, like that of the compass needle, in a circle around the axis of the shaft; secondly, an additional motion of rotation around a line drawn through its center of gravity parallel to the shaft. A body *rotates* whenever a line drawn from its center of gravity outward, through any point selected at random in its mass, describes a circle in the heavens." We leave the subject with this quotation.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending April 23, 1907.

AND EACH BEARING THAT DATE

[See note at end of list about copies of these patents.]

Acetylene generator, D. Barnard..... 851,613
Acid, anthrachinone disulfonic, M. Jljinsky. 851,423
Acid of phenylnaphthimidazol and making same, amido-oxy-sulfonic, Schulthess & Kerkovius 851,444
Adding machine, G. N. Hinchman..... 851,089
Advertising novelty, A. Marielle..... 851,297
Air brake attachment, R. P. Williams..... 851,465
Air compressor driving mechanism, B. Obear 851,556
Air cooler and purifier, C. W. Vollmann.... 850,985
Airship, T. S. Baldwin..... 851,481
Air signal, air brake, and steam coupling, automatic, H. C. Priebe..... 851,316
Alarm device, J. K. Stewart..... 851,261
Album, sectional, J. A. Mudd..... 851,546
Alkali hydrates and zinc sulfid, apparatus for producing, C. Ranson..... 850,965
Ammonia from gases, extraction of, W. Feld 851,349
Animal trap, T. Angerer..... 851,337
Apron fastening device, M. J. O'Connor.... 850,969
Atomizer, J. Waldman..... 851,265
Auger handle, G. P. Frank..... 851,127
Automobile, F. A. Nelson..... 851,026
Automobile shield, D. J. Deyo..... 851,502
Axle box lid, car, W. G. Dunham..... 851,077
Axles, ball-bearing boxing for vehicle W. E. Hixon 851,133
Axles or the like, lubricating means for, W. J. Greening..... 851,201
Baby walker and swing, combined, W. H. Niemeyer 851,249
Bag frame, Hiering & Fuller..... 851,421
Bags, etc., protective attachment for traveling, J. A. Walsh..... 851,267
Bale tie, Klingender & Coiner..... 851,524
Baling press, S. E. Gutridge..... 851,131
Ball mill, H. Lohnert..... 851,015
Bar. See Sash bar.
Bath tubs, basins, and like fixtures, waste for, Guthrie & Hayes..... 851,513
Beam setting press, M. Sklovsky..... 851,323
Bearing, ball, H. Hess..... 851,419
Bearing for machine spindles, compensating, B. M. W. Hanson..... 851,005
Bearings, cage ring for ball, J. M. Model.. 851,019
Belt shifter controlling mechanism, A. B. Wales 851,576
Belt tool, E. E. Barnett..... 851,482
Bench pin, J. V. Kapp..... 851,292
Binder, loose leaf, W. H. Krehbiel..... 851,096
Binder and loose sheet holder, temporary, H. F. Bushong..... 851,276
Binder or loose sheet holder, temporary, H. F. Bushong 851,342
Block signal, automatic, N. C. Keeling..... 851,523
Block signal system, Van Zandweghe & Viberti 851,456
Bobbin, E. Atwood..... 851,211
Boiler furnace, A. L. Hastings..... 851,088
Boiler furnace, locomotive, Wade & Nicholson 851,329
Boiler scales, compound for the removal of, G. W. Case..... 851,159
Bolt anchor, E. A. Stulz..... 850,980
Book for stamps, etc., H. M. Lindsay..... 851,536
Book or ledger and binder therefor, separable loose leaf, C. E. Morehouse..... 851,301
Book stock carrier, J. S. Murray..... 851,021
Book support, W. Smith..... 850,977
Booth, sleeping, E. Stempel..... 851,141
Boring and reaming tool, annular, B. Brownstein 851,399
Bottle, Davis & Finch..... 851,617
Bottle cap, A. G. Kaufman..... 851,424
Bottle handling apparatus, Kyle & Waugh. 851,425
Bottle non-refillable, J. E. Duffy..... 851,620
Bottle or package, non-refillable, W. J. Higman 851,006
Bottle stopper, India rubber, C. J. Bailey.. 851,212
Bowling alley ball returning mechanism, E. Powers 851,559
Box, E. A. G. Bierwirth..... 851,056
Box, C. M. Keefe..... 851,357
Box covering machine, J. Alger..... 851,052
Box opener, nail puller and hammer, combined, J. L. Riley..... 850,968
Boxing machine, B. W. Tucker..... 851,263
Bracelet, A. G. Pearce..... 851,373
Braiding machine, Parks & Wardwell..... 851,204
Brake shoe attachment for automobiles, etc., J. O'Leary 851,432
Brick or stone, manufacture of sand lime or composite, A. S. Crocker..... 851,406
Bridge, M. R. Biron..... 851,114
Bridge abutment, A. O. Cunningham..... 851,408
Bridle, R. H. Williams..... 851,463
Briquet press, O. Busse..... 850,905
Briquet press, E. C. Hutchinson..... 851,007
Broom, W. J. Tweedy..... 851,455
Broom corn combing machine, G. K. Miller. 851,202
Brush container, shaving, G. A. Schmidt... 851,443
Brush, folding, J. Kronacher..... 851,527
Brush, fountain, W. L. Clark..... 851,587
Brush guard, teeth, J. C. Nevius..... 851,550
Brush, tooth, E. L. Detrick..... 851,501
Building construction, A. Mohr..... 850,948
Building sheet, W. L. Caldwell..... 851,343
Burglar alarm, C. L. Wilkins..... 851,190
Burner attachment, G. Dawe..... 850,907
Burner attachment, M. J. Wolfe..... 851,191
Burning vegetation and melting snow and ice, device for, W. W. Lamb..... 851,011
Butter press and stamping machine, A. Prince 851,434
Button, collar, N. Casey..... 851,116
Cabinet, O. M. Tate..... 851,386
Cabinet, sanitary toilet, J. Pfeffer..... 851,028
Calculating machine, A. J. Postans..... 851,433
Calendar, record, F. H. Rice..... 851,439
Camera, J. A. H. Hatt..... 851,593
Candy cooling table, J. R. Windsor..... 851,148
Candy machine, Y. Liska..... 851,135
Car, J. J. McCarthy..... 851,022
Car bolster, T. R. Brown..... 850,902
Car, dump, S. Otis..... 851,372
Car dumping apparatus, F. W. Lovell..... 851,014
Car frame, Emerick & Alquist....851,228 to 851,230
Car wheel, R. P. Williams..... 851,464
Cars, collapsible and extensible safety gate for street and other, M. L. Rohrer.... 850,969
Cars, steam heating system for railway, E. E. Gold 850,923
Carbureter for explosive engines, L. C. Freeman 851,285
Carpet cleaning apparatus, nozzle for pneumatic, R. F. Diserens..... 850,909
Carpet renovator, R. H. Duesing..... 850,911
Carriage window, C. Nicholson..... 850,958
Carrier. See Book stock carrier.
Carrier, R. W. Franklin..... 851,200
Carving machine, E. R. Lochman..... 850,941
Cash carrier apparatus, D. E. Chism..... 851,344
Cash register, T. H. Harris..... 851,515
Caster, E. A. Bode..... 851,396
Cattle guard, K. B. Norman..... 851,431
Cellulose derivative and making the same, G. W. Miles, reissue..... 12,637
Cement and making same, waterproof Portland, S. B. Newberry..... 851,247
Chain link shackle, G. A. H. Dresler..... 851,619
Chain, ornamental, J. C. Hodges..... 851,288
Chain tension and brake device, C. Contal.. 851,119
Chair construction, J. H. Coffman..... 851,067
Change making machine, C. Ulmer..... 851,146
Chart, adjustable, E. H. Peterson..... 851,374
Chart, dress, E. E. Dobbs..... 851,279
Check handling device, M. Joseph..... 851,522
Cigar lighter, C. E. Bessel..... 851,218
Cigarette machine, E. Georgii..... 851,921
Clip for holding papers, clothing, etc., F. M. Bulkley 850,903
Clock escapement, M. Schucht..... 851,034
Clocks, balance wheel for, H. D. Gardiner. 850,920
Cloth cutting machine, J. B. Gury..850,927, 850,928
Clothes drier, R. N. West..... 851,462
Clothes line, E. Merrifield..... 851,543
Clutch, power transmission, C. C. Tilletson. 850,981
Coal crusher, M. F. Williams..... 850,988
Cock, gage, C. J. Harkins..... 851,235
Cocks, safety clutch for air brake angle, S. J. Barnhouse..... 851,338
Coffee urn, J. Heinrichs..... 851,417
Coffer dam and caisson construction, G. A. Le Fevre 851,532
Coiling machine, S. W. Baldwin..... 851,152
Coin holder, P. T. Dunn..... 851,078
Coin registering mechanism, Powell & Ellis. 851,251
Coins to receptacles, means for controlling the admission of, Ellis & Powell..... 851,282
Coke oven, J. Kerschgens..... 850,939
Cold storage apparatus, Devers & Williams. 851,618
Collar protector, J. H. Way..... 851,268
Collar shaper and drier, E. J. Hughes..... 851,356
Collar supporter, detachable, R. M. Dean... 851,278
Combination lock, H. C. Lowrie..... 850,942
Composition of matter and making same, J. S. Robeson.....851,378 to 851,381