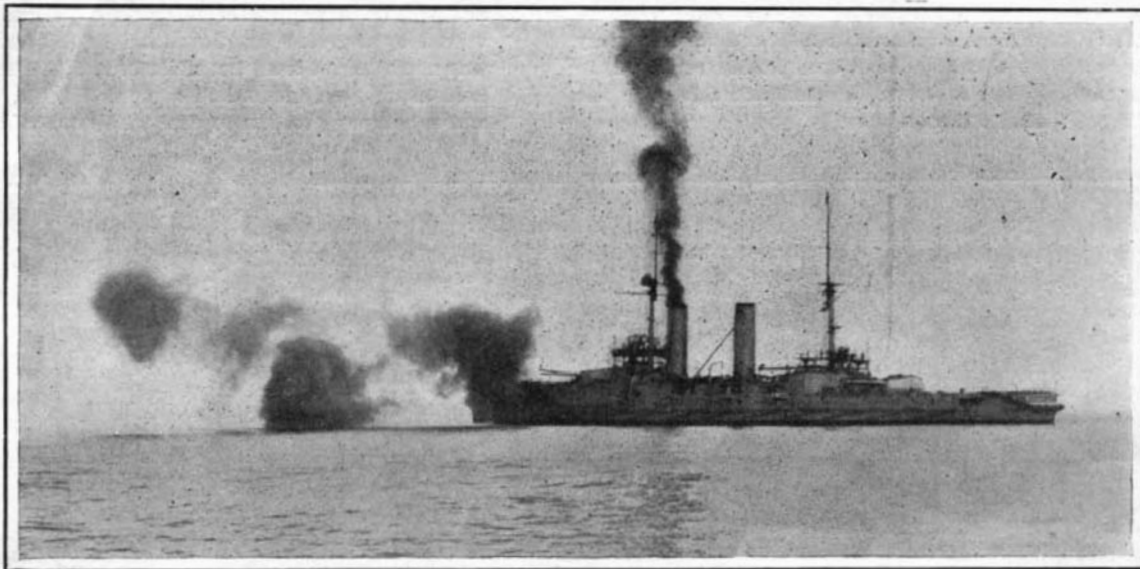


**THE JAPANESE SQUADRON AT JAMESTOWN.**

BY SAITO TSUNETARO, IMPERIAL FISHERIES INSTITUTE, TOKIO, JAPAN.

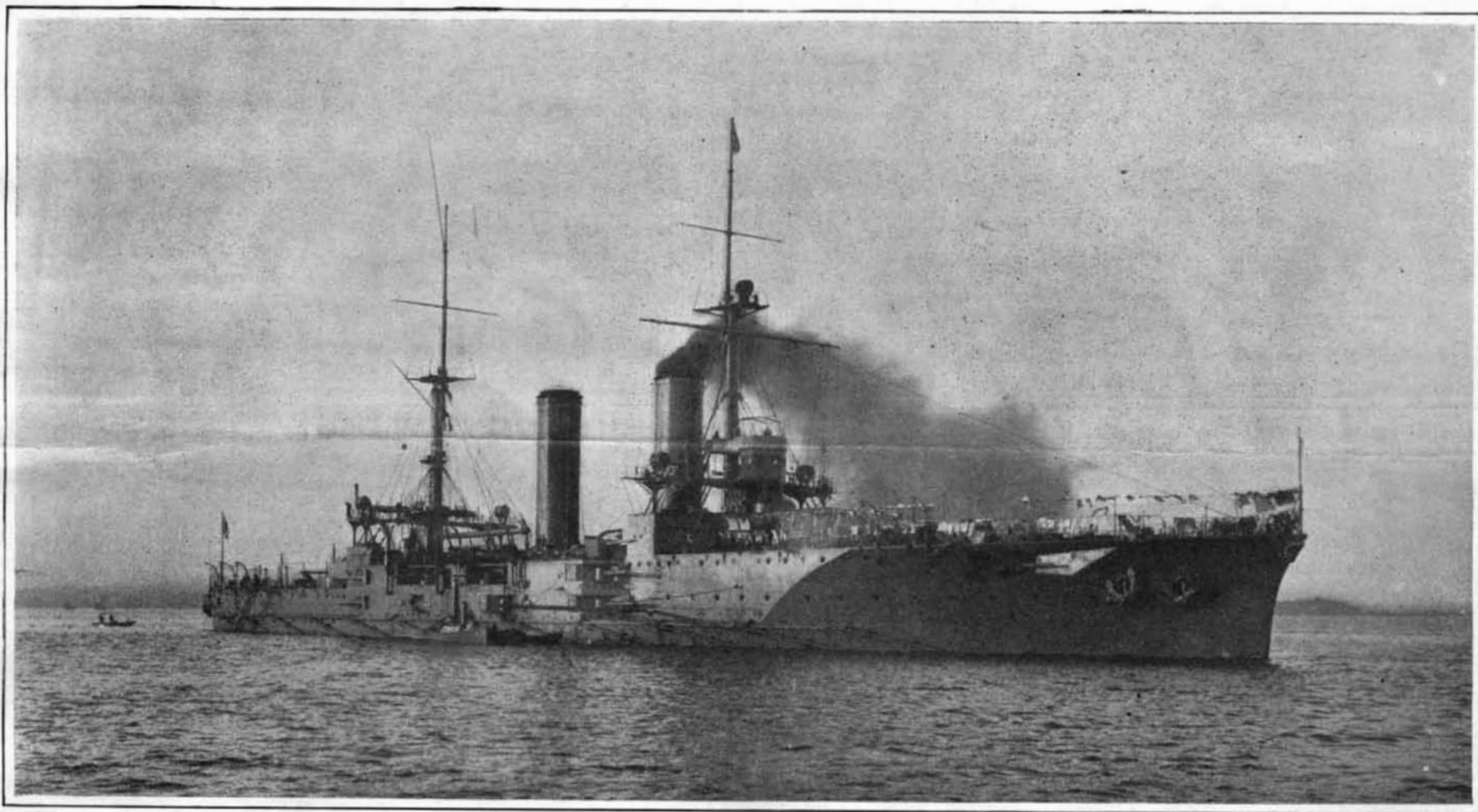
The Japanese squadron, consisting of the first-class armored cruiser "Tsukuba" and the second-class cruiser "Chitose," left Yokohama on March 28th at 11:30 A. M., amid a splendid send-off, for the United States to attend the international naval and military celebration to be held at Hampton Roads. These two ships of the Imperial Japanese navy will not be unworthy to take their places among the many warships which will be sent out by various civilized nations to participate in the celebration.

That the "Chitose," built in America ten years ago and on that account historically associated with the great republic, did splendid service during the Russo-Japanese war, is well known to the readers of the naval history of that conflict. She belonged almost continually to the Third Division under Admiral Dewa during the war and took part in every important engagement. The cruiser commanded by Capt. Takagi was the flagship of the above admiral when the first attack was delivered on Port Arthur in the beginning of February, 1904, and remained so for a considerable time thereafter, H. I. H. Commander Prince Higashi Fushimi being her executive officer. Besides participating in the memorable battle of August 8, when Admiral Vithoft with the whole fleet under his command made a bold attempt to break through the blockade of Port Arthur, she played a conspicuous part in

**GUN TRIALS OF THE "TSUKUBA" AS SEEN FROM OFF THE PORT BEAM.**

encountered a Russian destroyer, afterward known to have been the "Bezpretchny," and instantly sent her to the bottom. It was the "Chitose" that after the battle of August 10, advancing to Korsakoff (then a Russian port) in Saghalien gave the *coup de grâce* to the

and largest home-made warship so far completed, being the best specimen of Japanese naval construction to be exhibited before the world. The "Tsukuba," whose keel was laid in January, 1905, was launched in December of the same year; and her equipment having been



**Length, 440 feet; Beam, 75 feet; Displacement, 13,750 tons; Speed, 21 knots; Armor: Belt, 7 inches; Turrets, 9 inches; Guns: four 45-caliber 12-inch; twelve 6-inch; twelve 4.7-inch; two 3-inch; four Maxims. Keel laid at Kure, Japan, January, 1905; launched, December, 1905; commissioned January 14, 1907.**

**THE JAPANESE CRUISER-BATTLESHIP "TSUKUBA"—A NEW TYPE OF WARSHIP.**

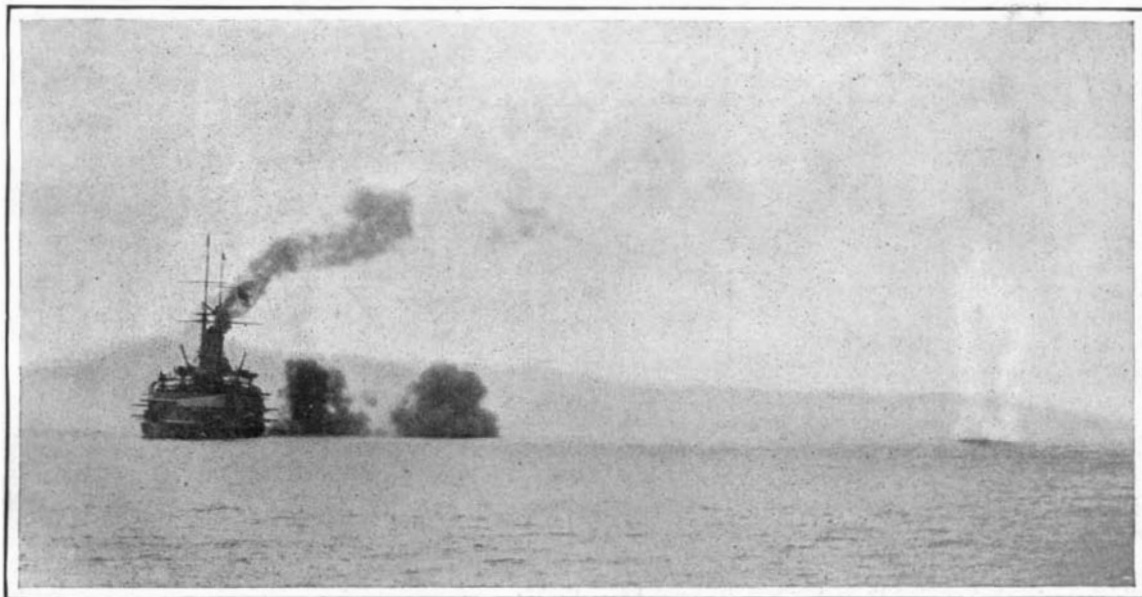
the enveloping movements in the battle of the Sea of Japan and contributed to the demoralization and destruction of the enemy's cruisers and special service ships. On the second day of the battle, while the ship was steaming alone toward the Liancourt Rocks, she

"Novik," the quickest cruiser afloat at that time, which had been very active during the siege of Port Arthur.

The Japanese nation is gratified that the "Tsukuba" was selected with the "Chitose" to represent the Japanese navy at Jamestown, as the former is the newest

completed on February 10, she was delivered by the Kure navy yard authorities to her present commander, Capt. Takenouchi, on February 14 last in order that she might take her place as a unit of the Second Squadron. This armored cruiser is 440 feet in length, 75 feet in beam, of 13,750 tons displacement, and about 20,000 horse-power. Her armor belt of Krupp steel ranges from 4 to 7 inches and her intended speed was 20 knots, but she made about 21 knots in her speed trial. The most conspicuous person in connection with the construction of the "Tsukuba" is Vice-Admiral Yamanouchi, who personally superintended it and whose great technical knowledge combined with rare administrative ability has made the Kure naval arsenal what it now is. As her construction was commenced after about a year's experience of modern naval warfare, it is known that she embodies a number of valuable lessons derived therefrom. In appearance the big cruiser marks a striking departure. Not only has the ram, with which we have so long been familiar, been omitted, as is the case with the "Satsuma," but she has a "schooner bow." Thus the cruiser has been especially strengthened forward and the overhang of the bow to the cut-water is expected to keep the fore part of the ship comparatively dry in a heavy sea. The fourteen ventilators of the ship being very low are invisible from outside and little exposed to the enemy's fire. They are also different in construction and shape from those of most other warships. Among other de-

(Continued on page 377.)

**STERN VIEW OF THE "TSUKUBA" DURING HER GUN TRIALS.**

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. ROSELI, 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. WOLSWICK, 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. JOHNSON, 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 pro-

cess 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. Leford'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, Ravenen 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. STEFFKE, 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