

Recent Balloon Ascensions Near Paris.

MM. Gustave Hermite and Maurice Farman have presented to the Académie des Sciences an account of a successful and important balloon ascension carried out by them on the 16th of September last. The ascension is described by the aeronauts as follows:

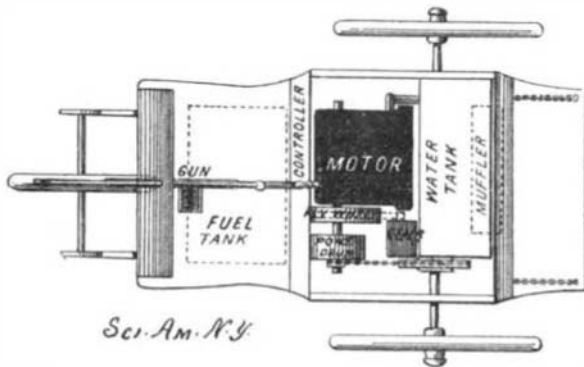
"The start was made from the gasworks, near Paris, at 6:25 in the evening, and a maximum height of 4,700 meters was attained, as indicated by our registering barometer of the Richard type, which worked perfectly, and was calibrated before and after the ascension by the Meteorological Bureau of Paris. After passing over the south of France, the descent was made on the borders of the Mediterranean, near the Gulf of Fos, after having remained fifteen hours in the air. The horizontal distance covered was about 655 kilometers. Our instruments included a registering barometer, thermometer, and hygrometer combined, also a second registering barometer, besides compasses, photographic apparatus, electric lamps, etc. A part of the ballast was made up of printed indication-sheets, which were classed and numbered. These we sowed along the route during the voyage at stated intervals. Of these sheets, many were sent back by post by the persons who found them, and thus we are able to reconstruct not only our route, but also the variations in horizontal speed. We left in a rather strong northeast wind, making 60 kilometers during the first hour. The direction, southeast, was not varied during the night, but the speed diminished gradually until morning, it being then 16 kilometers per hour. We were constantly surrounded by enormous clouds, but did not receive rain. We saw the earth at times through the rare openings in the clouds, and the moon permitted us to observe several optical phenomena, such as a lunar rainbow entirely colorless, which appeared for a few instants on our left and a little below us about 8 o'clock in the evening. Another phenomenon observed was that of the shadow of the balloon, projected upon the clouds and surrounded by a kind of halo, also colorless.

"The humidity, contrary to the general law, increased with the altitude and attained an approximative saturation at 2,800 meters, this height being reached a little before daybreak. The thermometer showed -5° C. At this time we were going directly south, and our speed, slow at first, became greater upon encountering a new air current, which a few hundred kilometers further south became a violent wind. It is at this point that we perceived a trumpet-shaped cloud, which enveloped us with a circular motion, and the equilibrium of the balloon was greatly compromised. We supposed that the circular motion was caused by the encounter of two currents of air. Having descended at 5h. 52m. in the morning to 900 meters, we recognized the country of Dombes, 45 kilometers to the north of Lyons, and there we received a few drops of rain. The balloon then commenced to mount toward the region of high altitude, and we passed above the clouds and saw the marvelous spectacle of an undulating sea of clouds, from which emerged, at a great distance, the principal summits of the Alps. Mont Blanc thus served us as a guide for a long time. At 4,100 meters we traversed a kind of ice-cloud, composed of microscopic crystals, which deposited themselves upon us with a peculiar crackling sound. Here the thermometer showed -7° and the hygrometer 40. Below us was a light rain. We saw also a rare phenomenon, that of the sun's image reflected from the clouds, which thus acted as a mirror.

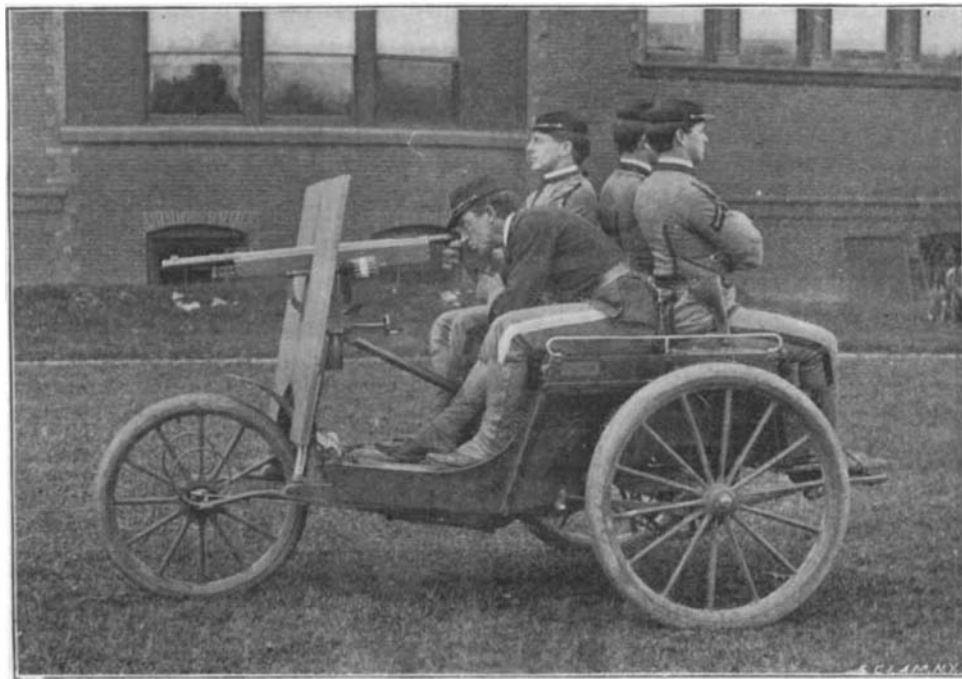
"Following the left bank of the Rhone, the clouds dispersed by degrees, being swept by the Mistral wind and carried back upon the mountains. Below us opened a transparent gulf, at the bottom of which we saw pass, at lightning speed, the towns of Valence, Montelimar, Orange, etc. At 9h. 12m., being then above Avignon, we came in sight of the Mediterranean. (Barometric altitude, 4,700 meters; thermometer, -10° ; hygrometer, 26.) We allowed the balloon to descend, and felt a strong wind. At 1,500 meters the wind whistled violently, and at 9:33 we took earth in the great plain of the Crau, after some terrible shocks. We had made 130 kilometers per hour since leaving Avignon, and near the earth the speed was undoubtedly much greater. The successful landing under such perilous circumstances was due in great measure to the accessories which were specially constructed for the purpose. The diagrams which we obtained with our registering instruments are very clear and show a decrease of temperature of 1° for every 185 meters. The working of the hygrometer was normal during the day. We also took some photographs in the high regions."

MILITARY MOTOR CARRIAGE.

We have been favored by Major R. P. Davidson, of the Northwestern Military Academy, of Highland Park, Ill., with a photograph of the military motor carriage, designed by him. It was built by the Peoria Rubber and Motor Vehicle Company, of Peoria, Ill., on the Duryea plan. The gun carriage is driven by gasoline. It weighs, with gun and full equipment, 1,100 pounds. The wheels are 36 inches in diameter and are provided with wooden spokes and pneumatic tires. The fuel tank is in front and furnishes gasoline to the 6-horse power Duryea three-cylinder engine, which has a fly-wheel 16 inches in diameter. There is a single feed-pipe and an exhaust pipe, and a single set of cam shaft gears which operates all the valves and igniters. The location of the various parts will be seen by reference to our diagram. The carriage has a windlass attachment, and by fastening a rope to it and anchoring the end of the rope, the carriage can pull itself out of holes or up steep grades. The tank holds enough gasoline for a run of 200 miles, and it seats four persons with tents, blankets, equipment, extra supplies, rations for a week or ten days, and 4,000 rounds of ammunition for the 7-mm. Colt automatic rapid-fire gun which fires 480 shots a minute. The gun has a range of 180 degrees and the firing range of the gun is over 2,000 yards. A detachable bullet-proof shield protects the operator, and the tank and



PLAN OF GASOLINE GUN-CARRIAGE.



MAJOR DAVIDSON'S MOTOR MACHINE-GUN CARRIAGE.

machinery are also made bullet proof. It is Major Davidson's intention to ascertain what the carriage can do on good roads, rough roads and over plowed fields. It will be taken to Washington in the spring and exhibited at the Ordnance Bureau. Major Davidson has given the matter five years of thought.

Production of Alcohol from Plants.

A number of interesting experiments have been recently made by M. V. Kuess as to the production of alcohol from plants. He finds that certain plants may be used to produce alcohol in profitable quantities and may thus afford an important source of supply. The plants best adapted for the purpose are the scilla (squill), the asphodel, and the alfa. The former is well known as a medicinal plant; it is interesting to observe, however, that the alcohol obtained from it does not contain any traces of the active principle which gives to the plant its medicinal properties. It is estimated that by proper treatment at least 25 per cent of alcohol may be obtained from this plant. The asphodel furnishes equally 25 per cent of its weight of alcohol, which possesses all the properties of the alcohol obtained from spirits, and besides a residue is left which does not contain injurious matter and may be used as food for animals. The alfa is a plant which is very abundant in the south of France and in the north of Africa, and from this source may be obtained not

only alcohol, but also a fibrous matter which may be utilized for the production of paper paste or textile fibers. The experimenter finds that 100 kilogrammes of the plant will give 14 liters of alcohol and 60 kilogrammes of paper paste, or, by another treatment, 10 kilogrammes of textile fibers. The production of paper paste from this plant, has been carried on for some time, and it has been known also that the plant gives fibers long enough for the production of tissues, but M. Kuess seems to have been the first to make known its value as a source of alcohol, while at the same time the production of the paper paste is not interfered with. He considers that it is the gum and the cellulose of the plant which furnish the alcohol by their fermentation. To separate these substances from the fibers, the plant is crushed in a mill and acidulated water added; the mixture is heated in a boiler, and during the operation the mass is traversed by an electric current. By this means the gum, cellulose, and coloring matter enter into solution; this is filtered and transferred to the fermenting vats. At the end of three days the fermented liquid is distilled and an alcohol of 45 per cent strength is obtained; this has at first a disagreeable odor, but the experimenter, by designing a special distilling apparatus, has succeeded in rectifying it to a point where no odor or taste is appreciable. The residue of the filtration is transformed into paper paste. If it is wished to obtain textile fibers, the plant is at first pressed between rollers, in place of grinding it, and is afterward treated by electrolysis in sea water. The alcohol obtained from the three plants above mentioned has the great advantage of containing neither acid nor ether, and may thus be directly employed in the different industries.

The Psychology of Fishes.

Numerous facts witness in a vague way to the ability of fishes to profit by experience and fit their behavior to situations unprovided for by their innate nervous equipment. All the phenomena shown by fishes as the result of taming are, of course, of this sort, but such facts have not been exact enough, says Mr. Edward Thorndike in *The American Naturalist*, to make clear mental or nervous processes involved in such behavior, or simple enough to be available as demonstrations of such processes. Through the kindness of the officials of the United States Fish Commission at Wood's Holl, he was able to test the efficiency of some simple experiments directed toward this end.

The common fundulus was chosen and the fish was kept in an aquarium. The space at one end was shaded from the sun by a cover, and all food was dropped in at this end. Along each side of the aquarium were fastened pairs of cleats, allowing the experimenter to put across it partitions of wood, glass or wire screening. These partitions were made each with an opening at some part, and then the experiments were begun. When the fish was caused to leave a shady corner and swim up the sunny end by putting the slide without any opening in behind him, and moving it gently up toward the forward end, the opportunity was given for observing the animal's behavior to good purpose.

This fish dislikes the sunlight, and tried to go back to the shaded portion. He swam against the screen, bumping against it here and there along the bottom; occasionally he stopped and remained still for a while. Sometimes he would rise up toward the top of the water, especially while swimming up and down the length of the screen. The screen used in the first experiment was cut away slightly at the upper corner so as to leave an opening, so that the slide somewhat resembled a letter with a postage stamp on it, the postage stamp representing the aperture. After the fish had been experimented upon six or eight times a day, it was found it swam against the screen less and less. He swam up and down it fewer and fewer times until finally his only act was to go to the right hand side, rise up and swim out. The fish had clearly profited by his experience and modified his conduct to suit his situation, for which his innate nervous equipment did not definitely provide. He had, in common language, learned to get out.

James Hamblet.

James Hamblet died on January 2, aged seventy-five years. He was one of the pioneer electrical manufacturers, and in 1878 he organized the time service for the Western Union Telegraph Company. He introduced a large number of improvements into the electrical distribution of time.

The Rapid Decline of Geyser Activity in Yellowstone Park.*

BY PROF. E. H. BARBOUR, OF THE UNIVERSITY OF NEBRASKA.

We would avoid posing as alarmists respecting the decline of geyser activity in the Yellowstone National Park, but nevertheless, if the present apparent rate of decline continues, it seems likely that within a decade many of the scenes which attract us most will have disappeared. The naturalist should visit this spot at once. It was my privilege to visit the National Park on August 5, 1895, and again August 5, 1899, and certainly the evidence of change during these short years seems startling. To the geologist the change is serious and impressive. It may be said in a general way that there is an apparent decline of geyser phenomena everywhere throughout the Park.

Or such is the impression of myself and others, if impressions are reliable. Furthermore, it is the impression of frequenters of the Park, especially those who visit it annually, that the decline of geyser phenomena there is greater than is realized by the people at large. So much for a general statement.

To be more specific, without entering into many details, it may be stated that around the splendid terraces at the Mammoth Hot Springs, buildings now stand where there was steaming water in 1885. Spots which we photographed in 1895, standing shoe soles in water, are now either dry or nearly so. Minerva Terrace, which was boiling and which presented a fine array of geyserite in 1895, is falling into decay. Large blocks of the "formation" are falling from the rims and sides of the basins. To the eye the amount of water which flows over Pulpit Terrace and Jupiter Terrace is noticeably less.

We should say not one-half what it was four years before. The lattice work, constructed for the purpose of spraying and incrusting curios, was changed to a new spot where water was still flowing. The narrow gage, which may be called a fissure vent, though still showing life, is extinct as compared with conditions four years ago. Roaring Mountain is still steaming, though silent. In the Norris Geyser basin the most obvious change is in the Black Growler, which formerly emitted volumes of steam from an oblique vent by the

* An address delivered August 25, 1899, at the Ohio State University, Columbus, O., before the Geological Section of the American Association for the Advancement of Science. Revised by the author especially for the SCIENTIFIC AMERICAN.

roadside. The steam jet is now divided and the volume of steam and its roar and display of energy greatly diminished. The Fountain Geyser, which was such a favorite that the Fountain Hotel was located at that spot, is now wholly extinct, and tourists are complaining because they must waste time stopping at this hotel. The Fountain has been replaced by a new but very inferior substitute named the Dewey Geyser. Tourists do not care to wait to see it in eruption. The giant paint pots are now so contracted in size that one can walk over what was a short time ago boiling mud. The red half is extinct; the white half active, though reduced in area. In the Upper Basin there is evidence on all sides of activity, but with many changes since 1895. Then the Splendid Geyser was attracting attention. Now it is silent and considered extinct. It is replaced by the Daisy Geyser, an interesting but vastly inferior substitute. The Cascade Geyser, another favorite because of the frequency of its eruptions (about every 15 minutes), has dropped to an eruption interval of once every 24 hours.

The Grand Geyser, which used to erupt once a day, has been active but three or four times the past season, according to all accounts. The Beehive Geyser, active in 1895, is supposed to be wholly extinct. Old Faithful seems as fine as ever, but the interval of eruption is now about 75 or 80 minutes instead of once an hour. If it is possible to judge fairly of such matters, there seems to be increasing activity in the ebullition of the water in that greatest of geysers, the Excelsior, which leads to a feeble hope that it may possibly be rejuvenated yet once again. In this connection may be mentioned the apparent increase in the activity of the Mud Geyser, by the thumb. The mud, which in 1895 was thick, and thrown up in large masses but a few feet, is now thinned and ejected as far as the road, a distance probably not far from 200 feet. At first thought it seems like increased activity, yet it may possibly be accounted for on the ground that the mud is in a condition making more active ejection possible. A great quantity of mud has been thrown out recently, as much as 8 to 10 feet thick, and the trunks and boughs of the neighboring pines are loaded and weighed down with mud. Trunks were noted where the coating of mud, half way up to top, exceeded 6 inches. The front half of the crater is now built up symmetrically with the other side, making a very regular funnel-shaped crater about 100 feet across,

and some 25 or 30 feet deep. Below, the mud is in a state of constant and active ebullition. Possibly this case may be construed as a case of increasing activity; however, on the whole it is only too obvious that there is a serious decline, as one can see by observation, and can learn by consultation with the drivers, guides, tourists and officers at the barracks. It was the testimony of all that the changes were much more rapid than is understood, and our closing admonition is, visit the National Park at once.

The Current Supplement.

The current SUPPLEMENT, No. 1256, is of great interest. "Mechanical Traction on Canals" is the title of an important article, and "Towing Canal Boats by Electricity" describes a curious trolley system in which the motor runs on rails along the tow-path and receives its current from a trolley. "The New Smokeless-Powder Guns of the United States Navy" gives important tables. "Homemade Windmills of Nebraska" is concluded, and the Holland mill, the stationary turbines, vaneless turbines and mock turbines are described. It is accompanied by thirteen interesting engravings showing in detail the construction of these important windmills. "Competition for the Best Life-Saving Device in Cases of Disaster at Sea" gives the official regulations which have been adopted in regard to the Anthony Pollok Memorial Prize. "The Pan-American Exposition of 1901" is accompanied by four large illustrations, and there is also an article on the buildings. The Exposition is going to be an important one, and will doubtless be visited by hundreds of thousands from all over the country.

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RECENTLY PATENTED INVENTIONS.

Bicycle Appliances.

DEVICE FOR MENDING PNEUMATIC TIRES.—EDMOND ISBILLS, Bayonne, N. J. The device comprises practically three parts: a guide-cup, a fixing-needle, and a cementing-needle. The fixing-needle is employed for securing the guide-cup in the tire; and cement is introduced by means of the cementing-needle. When the device is withdrawn from the tire, the puncture will be immediately filled with cement, the body of which will be left in the form of a cap or head adhering to the inner surface of the tire around and over the puncture. The tire can be inflated immediately after the cement has been placed in position, the air drying the cement and forcing it into better contact with the tire.

Agricultural Implements.

CHURN.—JOHN J. JONES, Braman, Oklahoma Territory. The inventor supports the cream receptacle or body of the churn in a light frame hung from a crank-shaft, which, being rotated, imparts a reciprocating and oscillatory movement to the body and thus quickly separates the butter from the other constituents of the cream.

CULTIVATOR.—HENRY C. BOTHWELL, McArthur, Ohio. This manually-operated cultivator comprises a frame carrying cultivating devices, a draft-bar secured to the frame and having points for a draft, which points extend rearwardly of the front cultivating devices and at an oblique angle to the face of the frame. The resistance to be overcome at the points of the teeth being greater than the gravity of the implement at these points, the implement will have a tendency to rise at the rear and revolve forward on its front teeth. The operator overcomes this tendency to revolve by lightly bearing downward on the handles, thus embedding the teeth the required depth. As the implement is drawn ahead, the teeth will regularly act upon the soil; and the draft will be exceedingly light.

Engineering Improvements.

SLIDE-VALVE.—JLA N. MOORE, Battle Creek, Mich. Often when a steam-pump is doing heavy work, the piston and valve travel are shorter than when the pump is doing light work. Hence less steam is admitted at a time when more steam is required. But when the load is reduced, the stroke increases and more steam is admitted than is necessary. To overcome this difficulty and to admit a proper amount of steam, the inventor uses a slide-valve provided with extended wings for covering at all times the admission-ports to the cylinder. The wings are provided with ports designed to register with the admission-ports on either a short or a long stroke of the valve, the ports on one of the wings being of a different area from those on the other wing.

WATER TUBE BOILER.—TOM FRENCH, Andover, Me. The boiler comprises spaced mud-drums above which are spaced steam-drums. A set of transverse water-circulating pipes lead from a mud drum on one side to the steam drum on the opposite side. The pipes of the sets alternate and are arranged close together at their point of crossing to form a solid roof for the fire-box. A very large heating-surface is provided to insure a quick generation of steam, especially as the circulation of the

water from the mud to the steam drums is comparatively quick; and the heat from the fuel in the fire-box is caused to circulate in the shell to give off its heat, before it finally passes to the smokestack.

Mechanical Devices.

COFFEE OR MALT DRIER.—FRITZ E. R. OKRASSA, Antigua, Guatemala. This drying-machine comprises a rotary drum provided with means for the admission and escape of the drying agent. Stirrers are held to rotate with the drum and are provided with apertures for the introduction of the material. Slides or doors close the apertures. By the improved construction of drying-compartments, and particularly by the specific arrangement of the stirrers, the drying-compartments can be filled about four-fifths, thus securing an exceedingly thorough utilization of the available space.

COTTON-ELEVATOR.—GEORGE W. WILLIAMS, Waco, Tex. The cotton-elevator is pneumatically-operated and is composed of an air-circulating apparatus and a number of boxes each having an air-conduit and a cotton-conduit. The cotton-conduit communicates directly with the main portion of the box into which the cotton is discharged. The air-conduit has a lateral extension at each end, communicating with the box directly adjacent to the cotton-conduit. The air drawn into the air-conduit passes from both ends of the cotton-conduit, thereby establishing cross-currents to deliver the cotton into the body of the box.

CORSET-FASTENER.—MARY O. KOSS, Carlisle, Ill. The Ross Corset Fastener is made very thin, with a smooth surface, and will not show through the dress, or catch upon or wear through the most delicate undergarment. When the corset is once fastened it will not open in any position or under any strain, until the ear of the fastener is pressed for that purpose. The fastener is hence especially adapted to the needs of girls in schools and factories, and to the wants of all other women whose occupations require freedom of the body, but who still desire the support of a corset. Being firmly fastened, the unpleasant snapping which characterizes the old style of fasteners is entirely obviated.

MAGAZINE PENCIL.—GEORGE W. RICE and GUSTAV ZERRMANN, Brooklyn, New York city. Within a suitable casing is placed a magazine which may be adapted for holding any number of leads. The magazine may be turned to bring any one of the leads desired into registry with an opening near one side of the casing. The end of the casing is beveled toward this opening, so that a larger blunt end of the casing is not brought near the point to interfere with the use of the pencil.

Miscellaneous Inventions.

PUMP.—ALVA L. REYNOLDS, Santa Ana, Cal. The object of the invention is to provide a well pump which acts on the vacuum principle and which after once being started will continue in operation without further attention. The pump comprises a vacuum-cylinder having a valve-controlled inlet and outlet. A float is arranged in the cylinder and likewise an oil-pump operatively connected with the float. An oil-receiver in the cylinder contains gasoline which can be ignited electrically, the successive explosions of which discharge the air, creating a vacuum and causing the water to rise.

COMBINATION STEP-LADDER.—WALTER L. SKELLEY, Cahool, Mo. The invention provides a combination long and step ladder, the sides of which when used as a long or extended ladder constitute each a truss and the hinges central struts, rendering the extended ladder exceedingly stable. The platform and connected parts may be utilized to lock and brace the sections when these sections are brought end to end to form a continuous or long ladder. The ladder can be quickly converted from one form to the other.

HAT-FASTENER.—GEORGES SCHMITT, Manhattan, New York city. This fastener is a simple and efficient device comprising a pin of novel construction which is adapted to be engaged with the hair of the wearer. When the pin is forced in position, loops are pushed into the hair so that the hat cannot be blown off.

BOX.—JOSEPH V. ORTEN, Iola, Kans. The inventor's purpose has been to provide a cover with a simple means for attachment to and detachment from a box designed to hold carbonated beverages. The cover consists of two sections, the inner or adjacent ends of which are connected by springs. Lugs on the outer end of the section engage perforations formed in upright portions of the box. When the sections of the cover are in horizontal position, the springs will cause them to remain in this position, because the tendency of the springs is to force the inner ends of the cover sections downward.

COMPOSITION FOR CLEARING SUGAR.—EDWIN L. McTYRE, Thomasville, Ga. The composition for clarifying brown or crude cane-sugar consists, of clay, chopped corn-husks, and water. A spongy batter is formed which retains its moisture long enough to extract the impurities from the sugar and leaves the sugar clear in the trough. The batter can be very cheaply manufactured and applied without danger of the clay's intermingling with the sugar in the trough.

CONVERTIBLE TUB.—MRS. NELLIE F. HURDEL, Manhattan, New York city. This is an ingenious invention for converting a bath-tub into a laundry-tub. Removable partitions are employed, provided with a pneumatic packing which not only makes a tight connection between the partition and the tub, but is self-sustained on the partition, so that no wires or screws are required to hold it in place. Should the lower stretch of the packing become worn, it may be turned upon the partition to bring the upper stretch across the lower portion of the partition.

DEVICE FOR CONNECTING SHAFTS WITH OTHER PARTS.—FRANK E. HAWKSWORTH, Helena, Mont. The purpose of the present invention is to provide a device for attaching a cam or pulley to a shaft, which device is so constructed that when the cam or pulley is driven in a proper direction it will remain fast on the shaft, and when driven in a reverse direction may be quickly loosened from the shaft. The device supercedes the pins commonly employed, which are so liable to fall out or be sheared off.

MOTOR-CYCLE FRAME.—TOM FRENCH, Andover, Me. Reaches have hall-and-socket connections with the front and rear axles, and a frame has ball-and-socket connection with the rear axle and a longitudinal sliding connection with the front axle. The frame, therefore, yields, when the vehicle-wheels pass over rough roads, to insure easy riding to the occupants of the vehicle and to allow the driving gear to work properly and true at all times.

SHIRT.—SIMON ELBAUM, Wilkes-Barre, Penn. The shirt or like garment is provided with a reinforce or yoke extended over the shoulders both back and front and also extended entirely around the sleeves for a portion of their length.

DEVICE FOR FASTENING SHOES.—MICHAEL M. DOOLEY, Logansport, Ind. The object of the invention is to provide a means for fastening shoes or for uniting the front sections of the uppers without using a lace or means liable to break. The shoes can be secured upon the feet more quickly than by the ordinary means and the front opening better protected.

FILLING-CAN.—WILLIAM L. CLAYTON and NEWTON R. PERSINGER, Central City, Neb. This device for filling lamps with oil from an oil-can or from a barrel comprises a screw-cap in which a delivery-pipe is secured, projecting above and below the cap. A spout is mounted to turn on the outer end of the pipe. An extension-pipe slides on the inner end of the delivery-pipe; and a T-shaped air-pipe is secured in the cap alongside the delivery-pipe, with its horizontal member above the cap. An air-bulb or bellows is connected with one end of the horizontal member of the air-pipe; and a removable cap is provided for the other end.

COMBINED ASH-BOX AND SHOVEL.—WILLIAM S. ANDERSON, Jasper, Tenn. This combined ash-box and shovel consists of a box having one side hinged to drop downward and adapted to act as a shovel. The side edges of this side have integral, up-turned flanges. Pivoted links connect the box and shovel and limit the outward swing of the shovel.

TOBACCO-BASKET.—GEORGE P. SUGG, St. Lewis, N. C. This basket is of rectangular shape and comprises a flexible bag or body portion and diagonally-arranged and pivoted spring-bars anchored at their ends to the angular corners of the bag, whereby the folding of the basket will cause the spring-bars to move radially to a less distance from the center than they occupied when distending the corners of the body portion or bag.

SHIPPING CRATE FOR EGGS, BOTTLES, ETC.—ROBERT I. STEWART, Xenia, Ohio. The inventor provides a cushioning body of stiff paper or pasteboard, having its folds so bent or lapped as to give unusual elasticity to protect the contents of the casing, package, or box. No special means are required to hold the folds down. The laps have an abutment or seat-portion bearing to receive the edges of the fillers or division seats forming the compartments of the crate and thereby render the whole structure stable in character.

ACETYLENE-GENERATOR.—WILLIAM F. COOPER, Meriden, Conn. This acetylene-generator has a water-reservoir in the base with a contracted mouth having a screw connection. A carbide-holder in the top has a correspondingly-contracted lower end with screw connection and is covered by a gasometer and connected therewith by a flexible fabric. A valve is mounted in the water-chamber below the bottom of the carbide-holder; and an adjustable rod fixed eccentrically to the gasometer, passes through the carbide-holder, and is adapted to open the valve and feed a fresh supply of carbide upon depression of the gasometer.

SHELVING.—JAMES M. LIPPINCOTT, Oakland, Ill. The improved shelving devised by this inventor comprises a shelving-section movable vertically to a height above the ordinary fixed shelving. The section is then