

A STONE BAPTIST CHURCH.

Our engraving represents the First Baptist Church, recently completed at Warberth Park, Pa. The design is unique. It is of the Gothic style of architecture. It is built of rock-faced Chestnut Hill granite of a grayish blue color, laid up at random in red mortar. Roof slated and finished with a tiled cresting. Dimensions: Front, 29 feet; side, 69 feet. The interior throughout is finished with oak. The auditorium, 26 feet x 57 feet, has a seating capacity of 280. It is lighted by stained glass windows, shedding a pleasant light over the auditorium, altar and choir box. The pastor's study is placed conveniently. The basement contains Sunday school room, two class rooms, and furnace room, besides other apartments. These apartments are furnished complete. Class rooms are connected to Sunday school room by double sliding doors, and are so arranged that they can be thrown together at pleasure. Cost of church, exclusive of furniture, \$6,000. The stone was accessible,

horizontally and vertically, no part of the building being omitted; and, further, in building the exterior slightly inclined inward. The walls are built unusually thick. The designs purposely showed no gables, and in vaulting very narrow spans were arranged for. On referring to official information regarding the earthquake, we hear that at Tokio and Yokohama together no less than 4,551 buildings were damaged, and that sixty-one persons were killed and 428 hurt by falling houses. Thirty-two buildings collapsed completely, and eighty-one were practically razed; five bridges gave way. Of course, the majority of these buildings were of native construction; but these, as usual, apparently withstood the shock far better than the average "European" structure.—The Builder.

A Great Tunnel Completed.

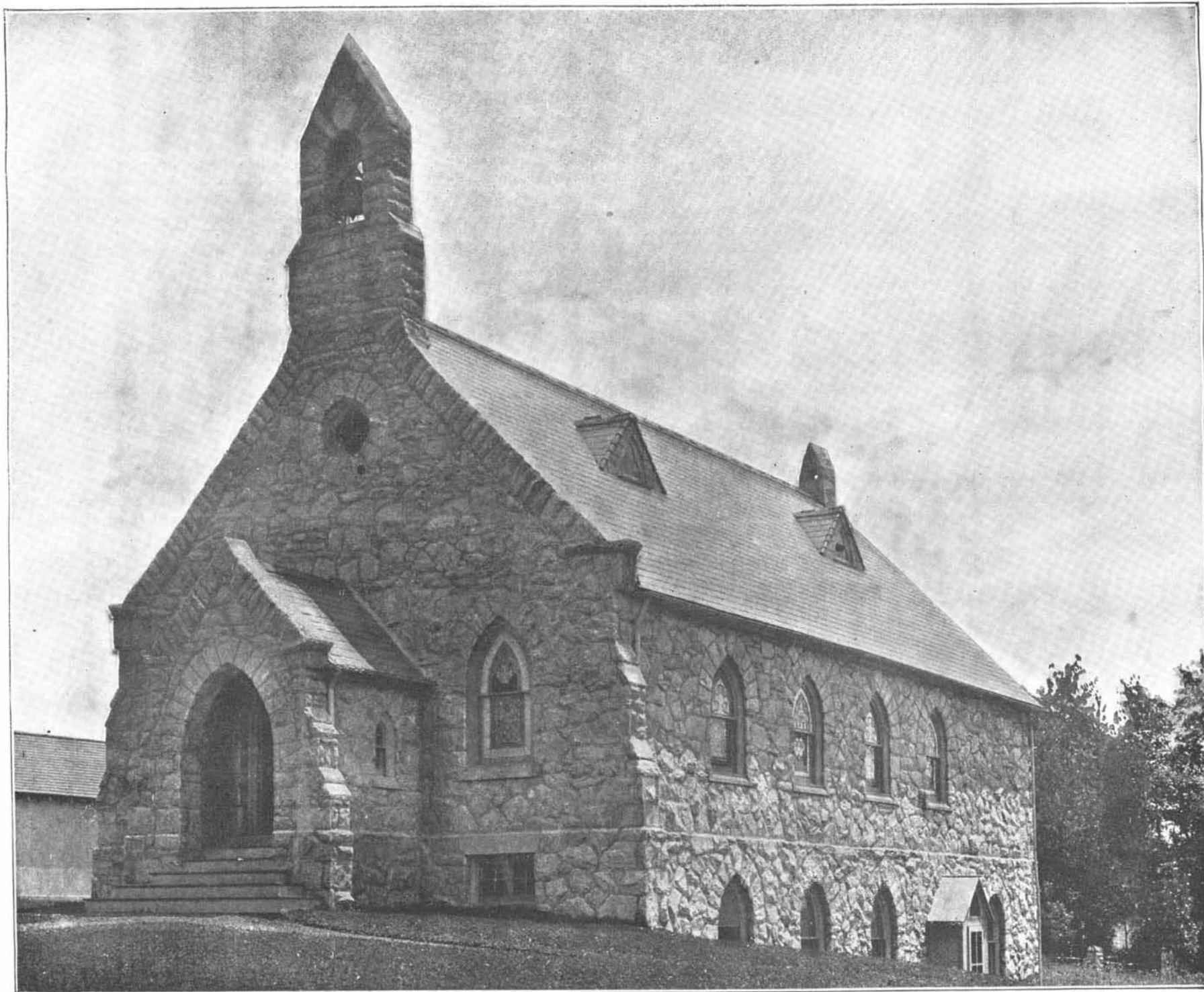
A notable piece of mining work was brought to completion, says the Mining and Scientific Press, at Park City, Utah, lately after over six years of constant labor.

tons from the Ontario and Daly—this would effect a saving of \$280,000 and the tunnel would more than pay for itself in two years. Add to this saving the amount that has been expended yearly in the tunnel, and it will be seen that the mines will be in a position to resume dividends. The mines will continue to be worked, notwithstanding the low price of silver.

Another Large Telescope.

The great 16 inch equatorial telescope under the guidance of Dr. Lewis Swift, at the Lowe Observatory on Echo Mountain, Cal., was inaugurated September 16. The Mount Lowe Echo says: The night was black dark, the atmosphere clear and pure, and the stars stood out as brilliantly as diamonds. Dr. Swift says, never before in his experience has he enjoyed such perfect brilliancy, and in these conditions, observations become a rich delight.

In sweeping over a field doubtless often before explored when in Rochester, to his intense delight he



A SIX THOUSAND DOLLAR STONE CHURCH.

rendering the cost less than the church could be built for in many other places.

Our engraving was made direct from a photograph of the building, taken specially for the ARCHITECTS AND BUILDERS edition of the SCIENTIFIC AMERICAN.

Earthquake Effects on Brick Buildings.

A letter of Messrs. Ende & Boeckmann, of Berlin, to our contemporary, the Deutsche Bauzeitung, gives us some interesting particulars of the effects of the late earthquakes on the new public buildings these architects have erected at Tokio. We refer to the earthquake that passed over Japan on June 20 last. It seems that the shock lasted no less than four minutes and fifty seconds, and that the buildings rolled perceptibly. While all the other brick buildings suffered badly, Messrs. Ende & Boeckmann's blocks apparently withstood the shocks without showing a crack. This escape seems to have been mainly due to the precaution of tying in all the brickwork with iron bands, both

This is the Ontario drain tunnel, which will drain the Ontario, Daly and Daly West mines, with which it has direct connection. It is expected that it will also reduce the water in the Silver King and other properties. The rate of flow through the tunnel before its connection was made was about 13,000 gallons per minute. As soon as the cleaning up is all done the great Cornish pump will be stopped, and all the water will flow through the tunnel. The mines are capped at a depth of 1,500 feet.

This tunnel is 15,490 feet long and it took six years and three months to run it. The average cutting per day was six and three-fourths feet. The completion of this tunnel will effect an enormous reduction in the operating expenses of the mines. The great Cornish pumping plant, which represents an outlay of nearly \$500,000, will now be stopped, and no fuel will be required except for hoisting. It is estimated that the cost of ore production will be reduced about \$5 per ton. On the basis of last year's production—56,000

speedily discovered four new nebulae, thus, at once, demonstrating the superior capacities of his wonderful glass in this pellucid atmosphere, and giving a foretaste of what may be confidently anticipated when all the final adjustments of the telescope are made and it is in regular operation. Dr. Swift is ably seconded by his gifted son Edward, who will soon inaugurate a system of making stellar photographs with the 16 inch equatorial.

The Longest Passenger Train.

A correspondent sends us a clipping from the Sioux City Journal, which states that about five miles west of there is a park called Riverside Park. It is situated on the Sioux River. At this park was held an interstate fair. On October 11 the Milwaukee Railroad pulled in from Riverside Park a train consisting of 28 passenger coaches. It is estimated that there were something like three thousand passengers on this train.

The Relative Strength and Length of Limbs in Man and Woman.

From the last report of the Anthropometric Laboratory, of London, we extract the following interesting data as to the relative strength and length of limbs in man and woman.

In man, in 50.9 cases out of a hundred, the right arm is stronger than the left. In 16.4 cases, the two arms are of equal strength. Finally, in 32.7 cases out of a hundred, the left arm is the stronger. Thus (and here is a fact that appears to be little known), out of every ten men, there are more than three whose right arm is not as strong as the left. The proportion is better distributed in women. Out of a hundred, only 46.9 possess more strength in the right arm, and 24.5 (say nearly one-fourth) have more strength in the left. Dynamometric experiments have likewise proved that in women the upper limbs possess the same strength much oftener than in men, since out of a hundred there are 28.6 that have given the same results in the two arms. As regards the respective length of the limbs, we see that in most cases the right arm and the left leg are the longer. Upon measuring fifty skeletons of adults, of men as well as women, the Laboratory found the following proportions. In twenty-three cases, the left leg and the right arm were the longer, in six cases it was, on the contrary, the right leg and the left arm, and in four cases only the limbs of the right side were longer than those of the left. Finally, in seventeen cases, all the limbs were more or less unequal in length.

Curious Facts About the Eskimos.

Mrs. Peary, the only lady to take part in any Arctic expedition, spent a year in Greenland. She has recently published her journal,* the contents of which are summarized in the Spectator, London. We quote:

"The wooden house which the exploration party built on the north coast of Inglefield Gulf, some miles due north of Whale Sound, was the base of operation for Mr. Peary's expedition to the north coast of Greenland, across the inland ice. The explorers sighted Greenland on June 24, 1892, and at the end of July landed and built the house. Mr. Peary, his leg having been broken by a blow from the ship's tiller, was unable to take any active part in work, and it was not till the spring was at hand that the broken limb recovered its real strength, just in time, indeed, for the ice

* "My Arctic Journal: A Year Among Ice Fields and Eskimo."

Journey. When the house was finished, several men of the expedition were sent to search Herbert and Northumberland Islands for an Eskimo settlement, and to induce a family to settle down near the house and make themselves useful—the man to act as hunting guide and the woman to do the sewing of the many skin garments. They returned with one family, and the first proof of his skill the Eskimo gave was to cut up a huge walrus with a six-inch pocket knife.

"Of course the prevailing characteristic of the Eskimos in Mrs. Peary's estimation was their dirtiness, and it was as a very great favor that she finally allowed the best sewer to squat on the floor in her own room. Indeed, the habits of the Eskimos never failed to excite her disgust, and she tells with horror how, when the Eskimo man had been given leave to bring home a cached seal, the most awful smell pervaded the place from the two-year-old corpse. Ikwa, the Eskimo, was most indignant at the refusal to allow it to be carried in the boat, declaring it to be 'the finest kind of eating for himself and family.' On November 23, Mrs. Peary notes that it was impossible to read ordinary print at noon, and henceforth the only difference between day and night at Redcliffe House was the addition of a 'large Rochester lamp' to the bracket lamps from 8 A. M. to 10 P. M., called by the Eskimos the 'Baby Sun.' A rule was made by the commander of the expedition that no member should occupy his bunk between 8 A. M. and 7 P. M., unless ill. The best sewer was a woman named M'gipsu, and she was Mrs. Peary's favorite, having also the additional distinction of forming with her husband and children the most northerly family on the globe. Mrs. Peary tells us the manner of preparing the clothes for the great ice journey. Her husband gave her an idea of the kind of garment he wanted, and she cut out experimental outfits of canton flannels; these, if satisfactory, served as patterns for the skins, so that no waste of skin occurred. How the natives prepared the skin, let Mrs. Peary relate:

"The native method of treating the skins of all animals intended for clothing is first to rid them of as much of the fat as can be got off by scraping with a knife; then they are stretched as tight as possible, and allowed to become perfectly dry. After this they are taken by the women and chewed and sucked all over in order to get as much of the grease out as possible; then they are again dried and scraped with a dull implement so as to break the fibers, making the skins

pliable. Chewing the skins is very hard on the women, and all of it is done by them; they cannot chew more than two deerskins per day, and are obliged to rest their jaws every other day.'

"More Eskimos arrived, till the permanent camp of the expedition became an Eskimo village. Two of the men were reported to 'swap' wives every year; they were the only two men in the tribe who did so; and though the other men regarded it as reasonable, the women were not satisfied with it. One of the newcomers, who had recently lost her husband, drowned by a seal, was asked by Mrs. Peary if the three children she had with her were all; she burst into tears, and left the room. On questioning her favorite, M'gipsu explained, after much hesitation, that Klayuh, the widow, had just strangled her youngest child, about two years old. She could not support the child herself, and no man would take her to wife with a child in the hood, where the women carry their children till they can get about themselves. M'gipsu, when asked if this was always done, said, 'Oh, yes; the women are compelled to do it.' When M'gipsu sat in Mrs. Peary's room, her husband, Annokah, came in as often as he could find an excuse for doing so. 'He frequently rubs his face against hers, and they snifle at each other; this takes the place of kissing. I should think they could smell each other without doing this, but they are probably so accustomed to the (to me) terrible odor that they fail to notice it.'"

Railway Across the Devil's Dike.

A new telfer railway across the Devil's Dike, on the Sussex Downs, was recently opened by the Mayor of Brighton. The track cables of the railway are carried upon a series of supports attached to a powerful catenary cable which is secured to the sides of the gorge, the structure being steadied and further strengthened by iron columns at about 200 feet from the extremities of the railway. The main cable is 1,200 feet in length, the space between the two stations about 1,100 feet, while the span between the columns is 650 feet. The wheels on which the cars run cannot get off the tracks, one set of wheels always controlling the opposite set. The cars are conveyed at a height of about 280 feet above the lowest point of the gorge, and are moved by an endless cable worked by a Crossley's oil engine. There are two cars at present in use. The mayor and mayoress were the first to cross and spoke of having had an agreeable experience.

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

CAR VENTILATOR.—Benjamin F. Hughson, Cold Spring, N. Y. This device has a tubular body, open at both ends, which flare outwardly, and is fastened to the side of the car roof to afford passageways leading into the interior, there being pivoted at the junction of the two passageways a flap valve, operated by the motion of the car to create a current which draws out the foul air. The device is very simple and cheap, and may be readily applied to an old car as well as when the car is being built. It operates automatically and may also be conveniently operated by hand.

MAIL BAG HANDLER.—Edward Davies, Whittington Hall Farm, near Stourbridge, England. To deliver mail bags, etc., to or from trains in motion, this inventor has devised an apparatus consisting of two members, one attached to the car and the other to the roadside platform, the members acting as radius links, and the package while being transferred gradually acquiring or ceasing to partake in the motion of the train. The arrangement is such that the radius members act conjointly on the package throughout its flight, both as regards the initiation, the change of direction, and the arrest of its actual or relative motion.

Mechanical.

GRINDING MILL.—Charles C. Howe, Westerly, R. I. This is a mill more especially designed for grinding mica and similar substances in a liquid. It has a receptacle with a bed in its bottom and a circular band at the side, the muller carried around resting on the bed, while there is an elastic band in the periphery of the muller in frictional contact with the band in the side of the receptacle. In grinding mica the muller is of stone and runs on a hard wood bed, the blocks having their grain on the end, and thus giving great brilliancy to the mica, which is rather smoothed or flaked than ground.

WATER ELEVATOR.—Joseph McMurrin, Shoshone, Idaho. This elevator is adapted to be placed in a running stream and operated by the current. A substantially triangular frame is temporarily anchored or permanently placed in the stream, its upper portion carrying a sprocket wheel, and there being at its lower corners drums having sprocket sections, actuating an endless sprocket chain carrying a series of buckets. The end drums on the lower horizontal section of the frame are driven by paddles propelled by the current, these paddles being on endless belts passing over the end portions of the drums.

CHILL FOR MAKING CHILLED CASTINGS.—Herbert Schon, Apollo, Pa. The chilling surface of this chill is formed by a series of hollow chill blocks, constituting cooling chambers, each connected at its lower end by a port with an annular waterway connected with a water supply source and also with a steam supply. Each chamber is also connected at its upper end with another waterway and an outlet for water and steam. The chill may thus be first heated up with hot water and steam, and cold water only be circulated through it after the metal has been poured, the temperature of the water,

and the consequent hardness of the casting, being largely under control.

Agricultural.

RIDING ATTACHMENT FOR PLOWS.—James Kleihauer, Jr., Johnson, Neb. This is a device of simple and inexpensive construction, readily applied and adjusted to any kind of walking plow. It virtually comprises two frames, a forward and right hand frame embracing a cross bar and attached parts, and a left hand rear frame, both frames being of angular construction. When the plow is to be used again as a walking plow the attachment may be readily removed.

Miscellaneous.

DRAG FOR SUCTION PIPES.—Ernest O. Patterson, Charleston, S. C. The body of this device has a wide, downwardly curved mouth, on the front side of which is a shaft carrying a valve for closing an inlet near the mouth opening, there being on one end of the shaft a weighted lever connected by a rope with the dredging boat on which is the pumping machinery. The valve is normally closed, but when a large amount of sand or other material fills the mouth so as to cut off the necessary supply of water to insure proper suction, the valve is opened by means of the rope, permitting water to be drawn in to cut up the choking material. The improvement precludes the necessity of pulling up the suction pipe in case of its choking.

BAILING DEVICE.—John Fatkin, Aspen, Col. A bucket having a valved outlet for its lower portion, and also an inlet valve, with a tripping device for unseating the valve in the outlet, form the main features of this invention, which has been devised for readily emptying flooded mines of their surplus water. It temporarily takes the place of the usual cage, and automatically fills itself when lowered into the water in the mine shaft, automatically discharging into an outlet chute when raised to the mouth of the shaft or other discharging point.

REFRIGERATING APPARATUS.—Ernest W. Carleton and James M. Odell, Austin, Texas. This invention provides means for lowering the temperature in a partially closed chamber by evaporating water by means of capillary attraction, automatically maintaining, also, a specified water level in the water chamber and good ventilation of the cooling chamber. The warmer the weather, the greater will be the difference between the temperature inside of the cooling chamber and that of the outside air. The apparatus is especially adapted for preserving meat, butter, eggs, milk, etc., in warm weather, without the use of ice or chemicals.

BALE BOX CLAMP.—Thomas M. Wallace, Marion, Ala. With a bale box of the ordinary construction, whose ends and sides open by the expansion of the bale when the clamping devices are released, preferably two clamps of this design are used, one near each end of the box, suspended above the box by chains. The clamps have at one end a catch to engage one side of the bale box, and at the other end the clamps have eyes in which is held a shaft resting in closed position against plates whereby the side and end doors are held

closed. The shaft has a handle by which it may be rolled up and off the plates when the doors open, leaving the bale free.

FLOOR CLAMP.—Moses Schlatter, Inman, Kan. The body of this device consists of two rigidly connected members in which are arranged opposing toothed studs, one of the studs being held to turn in its member, and the other turning and sliding in the opposite member, there being a lever and cam for actuating the sliding stud. With this clamp board for flooring, siding or ceiling may be brought and held in close contact while being secured in place. The construction of the device is very simple and inexpensive.

UMBRELLA.—Zebulon Wirt, Monticello, Ind. The frame of this umbrella may be readily applied to a walking stick or easily removed therefrom and placed in a pocket or small bag. It has a tubular shell, with cap flange and latches, a runner sliding on the shell and sectional ribs hinged to its cap, while sectional braces are pivoted to the runner and to the ribs. A second runner engages the latches of the shell and braces connect this runner and the ribs. The cover is attached to the frame in any manner known to the trade.

RIBBON DISPLAY CABINET.—Lewis Schoolhouse, New York City. This cabinet has a drawer with a transparent front, a wire forming a guide and handle for the drawer, and the casing and drawer being made slanting rearwardly, so that the rolls of ribbon are readily retained and can be easily placed in the drawer, where their size and color may be seen to great advantage. The drawer is dust proof.

PORTABLE BURGLAR ALARM.—Lars G. Larson, Moscow, Idaho. This is a small device, readily connected with the knob of a door lock or latch, to sound an alarm should the knob be partly turned. Its operative mechanism is held in a small case, with hanger loop to hang on the neck of the door knob, when a slight turning of the knob will operate a tripping cord releasing a spring-driven escapement wheel, causing a clapper to vibrate and sound a bell.

CHILD'S CRADLE.—Willis E. Phillips, Saguache, Col. The rocking supports of this cradle are pivotally connected with its ends, one at each side of the center, and pivotally connected with one another. There are link connections between the legs of the supports at opposite ends. The cradle may be readily swung with a long, regular motion, instead of the usual short, quick motion, and it is impossible to throw or move in the least the child held therein. The construction is particularly adapted to self-moving mechanisms, such as clockwork, electric motors, etc.

SASH FASTENER.—William R. Abrams, Los Angeles, Cal. This is an improvement in sash fasteners in which a toothed pawl is pivoted in a box on the window frame to engage a rack on the sash. The fastener has two toothed pawls, with teeth projecting in opposite directions, and with transverse bores in which are internal lugs out of alignment, a key engaging either lug independently. With this device the window may be left open at the top and bottom, and the further movement of the upper and lower sashes in either direction will be prevented.

CURTAIN.—Albert M. Branshaw, Escanaba, Mich. This curtain is designed to render air tight the opening over which it is drawn, and to afford a substitute for folding doors, awnings, arch closures, etc. Slideways are located at opposite sides of the opening to be closed, and have apertures through which extends a guide slot, while the curtain roller has guides which project into the slideways, and a slat bar at the lower end of the curtain has spring-controlled latches entering the apertures in the slideways. When made of fireproof cloth, for use as an awning, it is designed to afford the best possible protection, and it may be raised or lowered so that it will not be necessary to have any curtain on inside of building.

FRUIT HOLDER.—Thomas Leach, Taunton, Mass. This device has in its inner walls rigid vertical ribs and a series of downwardly projecting ratchet teeth, designed to hold oranges and other fruit placed therein, thereby enabling one to serve the fruit in a dainty way without it being necessary to hold the fruit in the hand.

PORTABLE COAL BOX.—Thomas Bunkenhofer and Ernest H. Weiss, Terre Haute, Ind. This is a receptacle having a hinged cover adapted for extension as a scooping or discharge chute, there being a transverse bail on the upper part of the box and a looped handle at its front. A full box may be carried with more ease than the ordinary coal hod with the same amount of coal, and when the top of the box is closed there is no danger of spilling the coal.

Designs.

LAMP HEATER.—Frances Rader, Prescott, Wis. This heater design consists of a truncated cone, with overhanging annular flange, provided with openings at the top.

HANDLE FOR FORKS, ETC.—Charles Osborne, New York City. This design has rosettes and leaves at the base and top of the handle and bud-like figures at its sides.

CARPET.—Pierre C. Chambellan, West Hoboken, N. J. The carpet body, according to this design, is decorated with bouquets of the rose, dahlia and lilac type, and it has a shaded subborder.

The same designer also produces a design in which the carpet body is decorated with connected leaf scrolls, alternate scrolls being reversely curved and varied, the border being nearly the same, but with a fan-like dado.

FABRIC RENOVATOR.—Mary S. Kjellstrom, New York City. A conical tube-like figure has a narrow opening at one side, from which extend side plates in the shape of triangles, with projecting sides united.

LAST.—Nicholas Bier, Salem, Oregon. This design represents the ball portion of two lasts joined at the heel, each reversed as to the other.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.