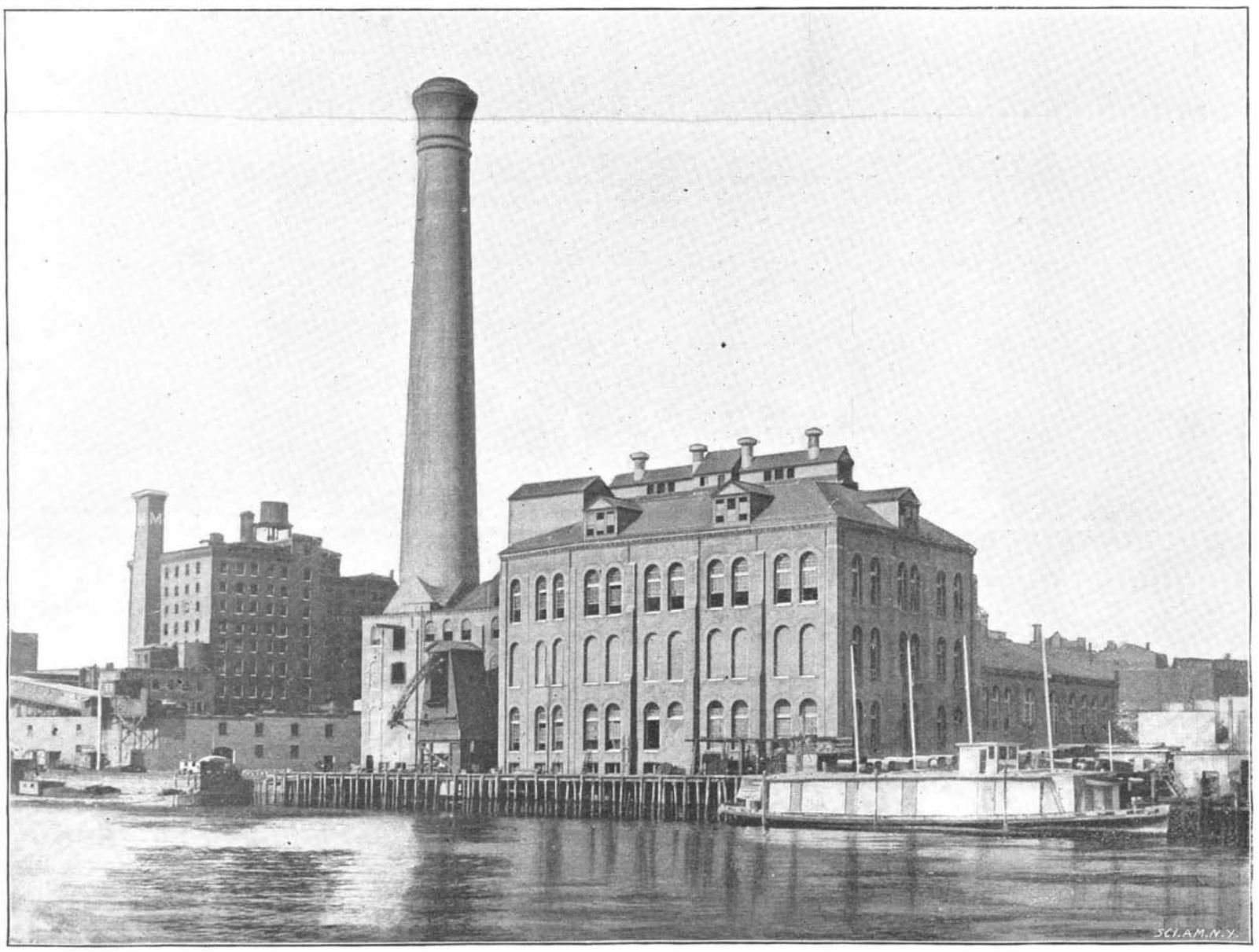
THE EASTERN POWER STATION OF THE BROOKLYN CITY RAILROAD COMPANY.

The Eastern Power Station of the Brooklyn City Railroad Company, situated on the banks of the East River, in Brooklyn, N. Y., from the electrical and mechanical aspect is undoubtedly one of the most perfect steam and electric plants in existence. Throughout the entire structure every detail is applied to secure perfection of working and an accurate record of results. The dynamos and steam engines have been already described by us in our issue of September 8, 1894. We now illustrate the building proper, with its great chimney, designed to supply natural draught for the thirty-six Babcock & Wilcox tubular boilers eventually to be introduced. The chimney is of brick and rises to a height of 296 feet, and contains a circular shaft 17 feet in diameter. It is not only available for natural draught. Into its base a species of nozzle or intake is built, to which are connected two 12 foot Sturtevant blowers. When these are in operation, a torrent of air is injected in the base of the chimney and acts injector-fashion to produce a draught. The advantages of this system are that it dispenses with the necessity for closed ash pans or boiler room.

Our view shows how remarkable a feature in the scenery this chimney is, and although situated in the vicinity of the many-storied sugar refineries of the eastern district of Brooklyn, themselves remarkable for height, it dwarfs them all. Within the building of this station are large coal pockets, situated immediately under the roof, with a capacity for holding 6,000 tons, and near the base of the chimney is seen the coal-hoisting plant. Like other electric power and light stations in this vicinity, the general cycle of operation includes the receiving of coal into roof pockets, its delivery thence by gravity to the boilers, and the removal of ashes from the lower floor. The coal and ashes being weighed and the water evaporated measured, and other accurate records of the process being kept, the entire operations of the station may be interpreted as an analysis on a gigantic scale for determining the efficiency of the processes and the quality of the fuel.



THE EASTERN POWER STATION OF THE BROOKLYN CITY RAILROAD COMPANY.

Experiments in Military Signaling.

The Army and Navy Journal says: The Signal Corps of the army is being highly complimented upon the work it has done in perfecting military signaling, particularly by means of telegraph lines. Important experiments were made with the bimetallic wire. It was laid on wet earth and grass, and conversation was carried on without the least difficulty, the tone of the voice and the volume of sound both being very good. Several hundred yards were added and the wire wound around an iron support buried in damp ground. The voice was easily distinguished, with little or no diminution in the volume of sound. The wire was then wrapped about a piece of brightly polished metal and buried in the damp earth directly in front of the receiver. This even did not affect the volume or tone of the sound received from the distant operator. With these "grounds" in the wire, the line itself, 20 feet in front of the receiver, was buried 3 or 4 inches in the ground. Still the tone and volume of the voice were unaffected, or, if at all, so slightly as to be inappreciable to the ear. Later a mile of the wire was laid on the damp grass and with the same good results as before.

Immersion of the wire in a lake, however, completely cut off the conversation. An iron feed pipe to the lake and the wire itself were thoroughly scraped to a clear and bright surface and the wire then wrapped tightly six or seven times around the pipe—this after a mile of the wire had been run out. Through this mile of wire lying on the ground and grass, and through this seemingly perfect "ground" by the water pipe, the voice came as distinctly and of as great a volume as ever. Again, after a night of very heavy rain, a half mile of the wire was stamped into the ground, soggy with water—in fact, practically buried in half a mile of mud—without affecting the volume or distinctness of sound, and words whispered at one end of the line were heard at the other. In another experiment over 150 yards of silicon-bronze wire, of the same size as the bimetallic were laid on the wet grass and buried in six places between the two stations, but conversation in low tones was entirely feasible. The wire was cut and the two ends stuck in the ground, at first a few inches apart and eventually at a distance of 45 feet apart, and, incredible though it seems, a message sent from one station was received at the other. The sounds came very distinctly at shorter distances, and at 45 feet distinctly though faintly. At a greater distance than 45 feet the sounds were too faint to be read, while at any less distance little difficulty was experienced in reading a message.

At the request of General McCook, the military balloon now at Fort Riley will be moved the latter part of this month to Fort Logan, where it will be available for field practice with military maneuvers. The experiences of the past year prove that the utility of the captive balloon is not confined to the open country, but on occasions it may be of supreme importance in connection with operations in the great cities. Within the past year the troops of our own army, called upon to assist the civil authorities, found themselves marching miles of distance to repress riotous proceedings, while the body of men sought for had accomplished its end and was already moving undisturbed and unobserved to another objective point. Under such conditions the operation of a captive balloon provided with electric and telephonic connection with the commanding general offers an unequaled means of observing and instantly reporting the movements of the hostile rioters, who would thus be under the surveillance of the commanding general, enabling him to act with promptness and effect.

Some interesting experiments were recently made from a balloon in an attempt to discover the whereabouts of the ill-fated Russian warship Rusalka. Count Nicolas Orloff, in the "France Adrienne," says the balloon was towed from place to place by the transport Samoyede, which was specially fitted up to facilitate ascents. The rate at which the balloon could be towed varied from 2¼ knots, with a favorable wind, to 6¾ knots. Two observers, relieved every three hours, were constantly in the car. Count Orloff says that with the balloon at a height of 400 meters it is not possible to see the bottom of the sea at great depths in consequence of the impediments to vision offered by the color of the water and the bottom; that, with a favorable light, rock and sand are clearly defined at a depth from 6 to 7 meters (19½ to 23 feet). The view from the car extended to about 46½ miles. Colonel Orloff concludes that "captive balloons could be of great utility as observatories to a fleet and in reconnoitering the entrance of unknown harbors, in hydrographical researches, and also in reconnoitering the enemy's ships and ports, more especially as by their means the exact position of forts, batteries and the various coast defenses could readily be ascertained."

Photographic Reproduction of Chalk Drawings.

The observation made in this column, says the Graphic, with regard to the closeness with which chalk drawings could be copied in photography, received ample illustration in a case that I only heard of the other day. It seems a drawing made by a notable artist was obtained and carefully copied on exactly the right kind of paper by means of photography. The imitation was said to be so complete as to almost deceive the artist himself. A good many copies of the print were then obtained; they were all carefully mounted in imitation of the original drawing, and these were all pledged at pawnbrokers in different parts of London for various sums. The majority of them were sold, and the affair was only found out by the artist discovering it in the house of a friend, and pronouncing it to be a photograph.

Accident to an English Express Train.

The Scotch express left Edinburgh as usual, and consisted of ten ordinary carriages, a Pullman car and two heavy engines. Running at the normal speed, nearly sixty miles per hour, the train approached Northallerton, in Yorkshire, on the Northeastern Railway, about 3 o'clock P. M., in the midst of a thick fog which covered the land, but left the atmosphere above clear. This probably prevented the drivers seeing the signals which were set against them, and the whistling of the goods engine gave the first intimation of danger. Almost immediately after the express plunged into the goods train. The impact was terrific. The front engine was turned over and thrown down the side of the slight embankment, which exists here, into a field adjoining, and the tender was swung completely around and rested end upward on the top of the engine. The second engine and tender fell over on its right side in the middle of the line, the tender being crushed into the footplate. The front portions of both engines were battered in, and one of them had its chimney and cupola knocked off. The guard's van was smashed almost to atoms, the woodwork being splintered, the axles snapped and various portions of the van and the luggage scattered about in all directions over the permanent way. The third-class carriage that followed shared a similar fate, the wheels being forced underneath the Pullman car, which was partly raised up by the force of the collision. The guard's van at the rear of the goods train was also smashed up. The Pullman car was damaged, but the main body of it was preserved intact. Six passengers were seriously injured, while the majority of the passengers received a severe shock. The driver of the first engine, Thomas Adamson, received fatal injuries, and the driver of the second engine was also seriously injured. Help was quickly at hand, and the injured received every attention, while work was at once begun to clear away the wreck.

The most noticeable feature of the wreck is the comparatively uninjured condition of the Pullman car. Although shifted from its normal position on the trucks, with the exception of the smashing in of the platforms, the car body suffered little and resisted the shock to a remarkable degree. "It is doubtless true," says the London Railway World, "that the weaker carriages before and behind the Pullman car acted in some measure, at least, as buffers; but it is evident that if the other cars had been built with something of the longitudinal stiffness of the Pullman, while the train might have been thrown off the track, there would have been no such complete smashing up of carriages as the photographs show. Our ordinary carriages with their comparatively weak sills and end construction serve quite well enough for regular service, but in case of collision they can offer slight resistance. With cars of longer and heavier build, the alignment of the train may be broken, and the cars may be thrown violently from the line and overturned, but the bodies are much more likely to remain intact and to offer the occupants an opportunity of escape than the match box structures which compose many of our express trains. The accident at Thirsk also demonstrated the advantages of the Pullman car in case of collision: and while accidents are happily of rare occurrence on English railways, it is a question that managers and superintendents of car departments might well consider, whether some changes cannot be made which will approximate in some degree the strength and stability of the Pullman car. In America, where, as a general rule, the ordinary carriage is much stronger than the corresponding carriage on an English railway, the companies feel the need of securing even stronger construction. The two examples which we have now had of the way in which the Pullman and the ordinary cars act in collision should serve as an incentive to devise means by which the effects of accidents may be minimized."

Patent Decision.

Where an invention had been reduced to practice in a positive form under a patent, and the applicant has simply filed his application, without doing anything to adapt and render the invention practical, and where he knew of the issue of the patent within a few days after its issue, and made no suggestion that the invention was his, but recommended it to purchasers, both orally and in writing, as the invention of the patentee, and where he did not assert any title to it until six months after the issue of the patent, and after he had left the employ of the company who owned the patent to do service for a rival company, the Court of Appeals of the District of Columbia held (Wells et al. vs. Reynolds et al.) that priority must be awarded to the patentee.

[The above decision is not only good law, but is sound common sense. From this decision inventors will see the danger of delay in the making of their applications, for the purpose of allowing another to get a patent, and after it is well introduced apply for a patent with a view of proving priority, thus derive the benefit of the first patentee's efforts in getting the invention introduced. This thing has been frequently done, but this decision should prove a deterrent.—EDS.]

The Water Power of Niagara.

Engineers have estimated, says Harper's Weekly, that the total water power of Niagara Falls is 7,000,000 horse power. This estimate, to be sure, is in the main only a guess, but when the area drained into the lakes above Lake Ontario, and passing through the Niagara River, be considered, the guess or estimate does not seem to be too large. The water surface of the great lakes above Ontario is 84,000 square miles, and the watershed of these lakes is 240,000 square miles—more than twice the area of Great Britain and Ireland. The total length of shore line is 5,000 miles, while the volume of water is 6,000 cubic miles, of which Lake Superior contains almost one-half. The rate of outflow at Buffalo is from 217,000 to 275,000 cubic feet per second, while the fall of the cataract is 165 feet. The volume of water in the lakes is such that it has been estimated that even if no rain fell, the flow of the river would be continued at its present rate for one hundred years—that is, if the lakes could be gradually drained. These are very large figures, but in the main they are the results of exact measurements.

The small water powers in the world are uneven, and are afflicted by floods and droughts, but this great power at Niagara is as constant as anything in this world can be, not even the ice in the severest and longest winter ever known appreciably changing it. The present plant is intended only to utilize 125,000 horse power, and the turbines now in place are only for a small part of this. Other turbine wheels will be put in place as the demand for power grows. The general plan of the company contemplates the ultimate use of 450,000 horse power on the American side and a like amount in Canada. Such a power would turn all the wheels within a radius of 500 miles of the falls. At the present time a considerable part of the power developed is to be taken to Buffalo by electric transmission, and it is the confident expectation of the electricians now at work on the problem that the power can be taken as far east as Albany, 300 miles away, and delivered there cheaper than power can be generated by burning coal. If this be so, then all the country between Albany and the falls will be admirably adapted for manufacturing, while the Erie Canal will afford cheap and tolerably quick transportation, for there seems to be little difficulty in the way of hauling these boats by electrical power.

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

SWITCH MECHANISM.—Sumter B. Battey, New York City. A transversely sliding switch bar is connected with the switch rail, according to this invention, there being blocks held on the bar, and spring-supported rods fitted to slide on the car platform are adapted to engage the blocks to shift the bar laterally. The improvement is designed to afford a simple and durable mechanism, more especially fitted for use on street railroads, to enable the driver or motorman to set the switch at will, while the car is in motion, to change the direction of the car to a side track, or to set the switch rail back to the main track, if it had been previously left turned for the side track.

DUMPING CAR AND ATTACHMENTS.—Samuel W. Beatty, Bayou Goula, La. This inventor has devised a simple, strong and durable car peculiarly adapted for carrying and dumping sugar cane, but also applicable for other purposes, and in connection with the car is an easily controlled mechanism to effect the dumping. The bottom and sides of the car form a slatted flexible body, held together by links, and the body is adapted to be raised at one edge and swung upward and outward in dumping, the loaded car having been previously brought beneath hoisting and dumping apparatus.

Mining, Etc.

GRADING ORES OR SIMILAR MATERIALS.—Daniel Brennan, Jr., Bayonne, N. J. This inventor has devised a method of classifying ores comminuted so finely as to be difficult and expensive to classify by screens. The material is fed in a close falling stream into a chamber containing water or other fluid, and the force of gravity is utilized to separate the finer and lighter particles from the coarser and heavier ones. Near the bottom of the apparatus are vertical partitions forming a central and two side pockets, each with an outlet, and on top of each partition is a movable partition on a shaft, by which the partitions may be adjusted toward and from each other, such adjustment of the partitions regulating the fineness of the material falling in the outer pockets.

MIXING DEVICE IN ALLOYING.—William H. Howard, Pueblo, Col. The process of alloying the silver in molten argentiferous lead, with zinc, is facilitated, according to this invention, by a device for conveniently and thoroughly mixing the zinc with the molten lead, without danger of oxidizing and rendering the zinc inert. A cover having on its under side an annular flange is passed into the molten lead in the pot, and a stirring device on the under side of the cover passes into the lead. This device consists of a cylinder supported by brackets from the cover, and a propeller wheel in the cylinder is adapted to be rotated by a shaft, the stirring being thus performed mechanically in a confined chamber, instead of by hand, with ladles.

Electrical.

SECTION INSULATOR.—Albert Hennefeld, Christ. Dehner and Charles H. Van Ness, Colorado Springs, Col. This is a simple and effective trolley wire break, which may be inserted in the line at any time without interfering with traffic, and without the necessity of slackening the line. It consists of a curved bar of wood or other insulating material with metallic tips at its ends, and means for mechanically connecting the ends of the trolley wire and engaging the span wire, the insertion in the line being made without the use of solder, and without the necessity of slackening the line.

TELEPHONE MOUTHPIECE.—Rial N. Denison and Frank M. Geary, Brooklyn, N. Y. This mouthpiece is suitable for attachment to speaking tubes as well as telephones, and does not differ in appearance from the ordinary mouthpiece, but it is made with an outer and inner shell to form an intervening chamber, the inner shell being perforated and an antiseptic material located within the chamber, whereby the mouthpiece will be cleanly and in no manner a conductor of germs.

Mechanical.

POWER HAMMER.—James B. Sweeney and Robert W. Laird, St. Johnsbury, Vt. This hammer is adapted to deliver an elastic blow similar to that of a hand hammer, and has a vertically reciprocating hammer head actuated by a tilting helve, the hammer head and helve being connected by a built-up spring formed of contiguous parallel plates, so that by using more or less plates the spring may be more or less resilient. The invention provides a simple and easily operated means of driving and adjusting the helve to give a powerful blow and just the requisite stroke.

MACHINE AND METHOD OF FULLING CLOTH.—Henry Balbian, North Vassalborough, Me. This invention provides for uniformly fulling a number of separate pieces of cloth simultaneously by twisting them together and then fulling them in their twisted condition. In the fulling machine, in combination with the fulling rollers, is a revoluble carrier provided with guide holes for the passage of the pieces of cloth, and a guide rod located intermediate the fulling rollers and the carrier. Each piece is, by means of this improvement, designed to receive the same fulling as would be the case with the ordinary machine treating one piece.

WRENCH.—William N. Smith, Santa Cruz, Cal. This is a monkey or pipe wrench of very simple and durable construction, in which the lower jaw may be quickly and accurately adjusted to a pipe or nut, this being effected with one hand. The jaws are capable of very fine adjustment, and the tool is composed of but few parts, any portion being capable of ready replacement, should it become damaged or otherwise unfit for use.

Agricultural.

THRASHING MACHINE.—Riley Knight, Moscow, Idaho. This invention provides for locating an engine upon the thrasher, and a mechanism driven from the engine whereby driving power may be applied for thrashing or to propel the machine, the shifting being effected in a quick and simple manner. The machine also has a hoisting drum adapted for use in connection with the feeder of a derrick table which may be coupled to the thrasher, and both of them moved by the engine and connected driving gear. The engine may be removed when the thrasher is not needed, and used for other purposes.

LAND MARKER.—Henry Bowers, Milton, Wis. This device comprises a marker arm adapted for pivotal attachment to a planter, and with a regulating block at its pivoted end, and other novel features, whereby the driver, without stopping the team or leaving the seat, may elevate the marker as desired above the ground, or throw it from one side of the machine to the other. The device is especially adapted for use with corn planters, and is simple and easily operated.

FRAME FOR HAYSTACKS.—John P. Brown, Walcott, Ind. This frame comprises upper arched sections adapted to cover the top of the stack, square sections to cover its sides and ends, and quadrant sections to assist in closing the ends, each of the sections comprising an open frame provided with a netting, and means for detachably connecting the several sections with each other. The frame is inexpensive, durable, and readily applied to a stack or rick, preventing the stack from falling or being blown over by heavy winds, while any part of the frame may be readily removed to afford access to the straw.

Miscellaneous.

THAWING ICE FROM PIPES.—Isaiah H. Simpson, Brunswick, Me. This is an improvement on a formerly patented invention of the same inventor for an improved portable device, of very compact construction, for rapidly thawing ice formed in pipes. The invention consists principally of a revoluble boiler, through which circulates the water to be heated and forced into the thawing pipe.

SWING.—Samuel I. Alston, Galveston, Tex. This is an improvement in swings whose seats or seat supports are suspended from a pivoted rocker. The frame forming the support of the swing can be easily knocked down and packed in small space, or moved to where it is to be erected, indoors or in the open air, the swing being a neat, convenient, and perfectly safe one for the use of either children or adults.

PAPER FILE.—Joseph B. McEnally, Clearfield, Pa. This device comprises two clamping strips, one with two transverse slots and a laterally opening longitudinal slot, while the other strip has spaced holes conforming with the transverse slots. A binding wire is bent to produce two limbs that engage the spaced holes, pass through the transverse slot, and when folded enter the longitudinal slot. The device is most simple and inexpensive, and affords means for securely filing papers that are to be detachably bound in a volume.

HANGER FOR USE IN BUILDINGS.—Louis Lane, Newark, O. This hanger is for securely supporting the ends of joists in buildings, and is adapted to be readily secured to the header or supporting beam or wall. It is formed of sheet metal, and has a horizontal seat, from which extend vertical triangular wings, triangular flanges extending sidewise therefrom at right angles, and there being a bearing iron on which the triangular flanges are fastened. The blanks for the hanger may be cut out of sheet metal without waste.

PAPER BOX.—Edward E. Pinkerton, Sioux City, Ia. This is a folding or knock-down box, formed of a single blank of pasteboard or similar material, being quickly cut or stamped therefrom and readily creased and folded, and the individual parts securely locked in place.

TYPEWRITING MACHINE.—Walter F. Kasson, Boise City, Idaho. This is an improvement in typewriters, having a knee-lever attachment, whereby the carriage may be shifted from left to right without manual assistance. The platen is automatically turned at the end of each line to make the line space, or it may be turned by striking a finger piece of the platen key. The improved attachments are applicable to Remington machines, and, with slight modifications, to other machines.

ALARM CLOCK.—Theodore Biedinger and Thomas J. Kane, New York City. This is an improvement in clocks, having a setting spindle to spring out and stop the alarm, and which, when pushed in, permits the alarm to ring until the clock is run down. The attachment is very simple, costing comparatively nothing, and may be arranged so that one cannot stop the continued sounding of the alarm until the attachment is readjusted by hand for such purpose.

GARMENT SECURING DEVICE—Otte Van Oostrum, Portland, Oregon. This is a device, convenient to adjust, for reliably retaining trousers, gloves, or shoes, in closed adjustment, but so that the fastening may be released by draft strain on a cord or other flexible connection attached to a series of similar fastening devices.

RAIN WATER CUT-OFF.—Jean M. Castaing and Jean B. Dohin, New Orleans, La. This is a device to be arranged between the conductor on a building and the cistern. It is so constructed that the first water running from the roof, carrying off the accumulations of dust, etc., will be discharged without running into the cistern, but after a certain amount of water has been thus allowed to flow away a valve will be automatically shifted so that the clean water will run to the cistern. The apparatus is very simple and may be applied to any ordinary conductor and cistern.

WELL PIPE PULLER.—Jerome S. Cousins, Williamsville, Mich. A base, which may be of heavy plank, is slipped over the pipe, to rest upon the