Patent Department

UNITED STATES AND GERMAN PATENT PRACTICE.

Our Consul-General at Berlin, Mr. Frank H. Mason, has handed in a report in which a shrewd comparison is drawn between the practice followed in the German and United States patent offices, and in which are contained many suggestions of considerable value to inventors.

Mr. Mason shows in the introductory portion of his report how incorrect is the supposition that the German patent examiners are hostile to foreign inventors, and that every inventor is considered a plagiarist until he has proved the contrary. "In many, if not the majority, of the cases," says Mr. Mason, "the troubles of American inventors in the German Patent Office are due to their failure to realize the difference in the two systems of application, by reason of which an application which would be correct at Washington would inevitably fail at Berlin." Since most of the applications are not prepared by the applicants themselves, it follows that the attorneys are at fault. It should, therefore, be the aim of every inventor who seeks the protection of foreign patent laws to employ as his agents only attorneys thoroughly familiar with foreign patent practice.

"Specifications and claims for patents on American inventions," continues the report, "are frequently presented in the form of translations made by persons who have only acquired a superficial knowledge of German. Such translations, made with the aid of a dictionary, mechanically translate the words, and not the meaning, of important phrases, so that the specifications and clauses as filed are often incomprehensible. This entails additional correspondence, corrections, and frequently long delays which might have been obviated. Few persons, comparatively, are capable of translating a technical description so that it shall mean exactly the same in a foreign language as in the original, and it is this want of exact completeness that often loses a foreign patent or renders it, if gained, loose in its provisions and impaired in value."

The theory and definition of what constitutes a patentable invention differs widely in the United States and in the German Empire. "This difficulty is more especially obvious and serious in the case of a machine composed of a number of parts, on each of which priority of invention is claimed." In the United States new constructions and combinations can be patented which in Germany can be protected only by several patents, for the reason that the German patent rules would require a division. How lamentably inadequate a mere translation of an American patent specification must be in such cases is obvious. A specification thus improperly presented "entails delay, expense, and introduces a new element of uncertainty into the case, since one or more of such separate claims, which are all covered by one American patent, may be rejected by the German examiners.

"Each claim in the United States must be complete in itself, which not only means that no reference may be made from one claim to another, but also that each claim must cover a combination quite separate from and independent of the other claims. Quite the opposite is the case in Germany. Here the first claim is the statement of the invention, and all other claims must fall within the same scope. In this country (Germany) any number of 'modifications' may be introduced in the subsidiary claims, while in the United States 'alternative constructions' are inadmissible; and subject-matters introduced as 'modifications' in subsidiary claims in Germany can only be properly claimed in the United States as new combinations quite separate from and independent of the other claims."

In conclusion, Mr. Mason emphasizes the fact that "no foreign people apply for and obtain so many patents in the United States as Germans, and in no country is it more necessary and to the advantage of American inventors to protect their inventions by patents than in Germany. A clearer and more exact understanding of the many differences in practice and theory between the two countries . . . would save not only time and money, but avert friction and litigation."

COL. J. J. ASTOR'S MARINE TURBINE.

The phenomenal speeds achieved by the "Turbinia" type of fast vessels, and the great satisfaction which the passenger steamer "King Edward" is giving in regular service on the Clyde, afford good reason to believe that the steam turbine is destined to play a most important part in marine propulsion, both in the navy and the merchant marine. The records of the Patent Office prove that a great amount of thought is being given to the development of this form of motor; and, in spite of the excellent results which have already been attained, there is no reason to doubt that the turbine will be further improved, both as to its compactness and its efficiency, and will pass through a development comparable to that of the reciprocating steam engine.

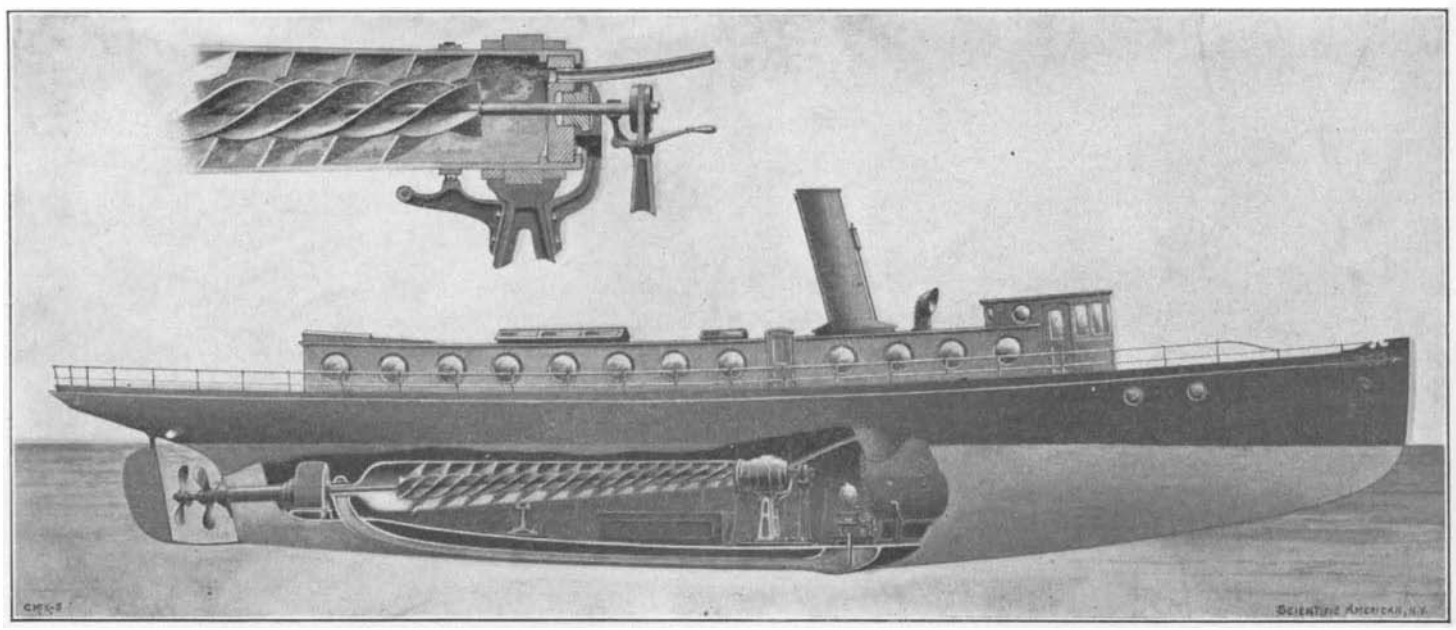
The accompanying illustrations have been drawn to show the details and methods of operation of a marine steam turbine designed by Col. John Jacob Astor, who, after giving much thought to the subject, is convinced that the steam turbine is capable of improvements which will overcome some of the difficulties inherent in the present type.

The Astor turbine is distinguished broadly from the best-known existing forms by the fact that it has no stationary parts other than the journals and foundation frames which carry it, the casing of the turbine revolving as well as the shaft, but in an opposite direction. The general construction of the motor is shown clearly in the accompanying sectional views. It consists of an interior shaft which extends from the forward journal through to the rear propeller. Upon this shaft is formed a series of spiral blades, which have a steady increase in diameter from the forward or admission end of the turbine to the rear or exhaust end. The shaft and blades rotate within a flaring, funnel-shaped casing, around the inner surface of which is formed another series of spiral blades, also of increasing diameter, whose twist is in the opposite direction to that of the blades on the shaft, the two sets of blades or vanes being respectively right and left-handed. The tubular casing is drawn down at the exhaust end to form a hollow shaft, which incloses the central shaft, and extends through the deadwood and the sternpost. The propellers are right and left-handed to match the direction of the blades of the respective shafts to which they are keyed, the two propellers thus rotating in opposite directions.

The casing increases in diameter at the proper rate to secure an even rate of expansion of the steam, which is conducted from the exhaust through a length of piping formed in the keel of the launch, the keel thus being made to serve the purpose of a condenser. The condensed steam collects in a well from which it is drawn by the boiler feed pump. Steam is admitted to the forward end of the turbine, and, striking on the two sets of blades, the shaft is rotated to the right and the outer, movable casing to the left, the respective propellers being, of course, driven in corresponding directions.

As compared with the ordinary reciprocating engine, the marine turbine presents the great advantage that it is perfectly balanced. The balancing of the reciprocating engine is to-day a more or less unsettled problem. Even the high-speed Atlantic vessels, whose engines have been built on the Schlick-Tweedy system, are subjected to an annoying amount of vibration. A further advantage of the marine turbine is found in the fact that the center of gravity of the motor lies near the axis of the propeller shaft; whereas in the vertical reciprocating marine engine, the position of the cylinders, crossheads, connecting-rods, etc., above the shaft must necessarily raise the center of gravity from several inches to several feet, according to the size of the engine, above that of the turbine motor. There is, moreover, the advantage of a perfect expansion, the steam, however high its initial pressure, being expanded down to zero at the point of exhaust.

As compared with turbines of the Parsons type, it will be seen that in place of a fixed casing and blades, inclosing a rotating shaft and blades, in the Astor turbine both the casing and the shaft rotate, but in opposite directions. Col. Astor believes that the extremely high speeds necessary to secure the best results in steam turbines are a serious disadvantage, which it is desirable to get rid of by other means than by elaborate gearing. By applying the energy of the steam in rotating both the central shaft and outside casing he has sought to reduce the rotational speed by fifty per cent, and still secure the same power at the propellers, with a theoretical gain in efficiency due to the use of two propellers instead of one; for it is claimed that there is a decided gain in propeller efficiency, due to the fact that the rotation of the first or forward propeller gives the water at the stern a rotary or whirling motion, and forces it aft in a favorable direction for the action of the second propeller, and thus the combined efficiency of the propellers is increased. Moreover, judged in its effect upon the helm, the wash of the second propeller corrects that of the first and the flow of the streams of water is more truly parallel with the axis of the vessel, thus insuring a more perfect action of the helm. The inventor considers that there are decided structural advantages in placing two propellers on the center line of the ship, seeing that the double shaft passes through the sternpost and deadwood and is, therefore, held by the most rigid portion of the vessel. Col. Astor has applied for patents in the United States and the principal foreign countries.



COL. J. J. ASTOR'S DESIGN FOR A MARINE TURBINE.

New Methods of Duplicating Sound Records.

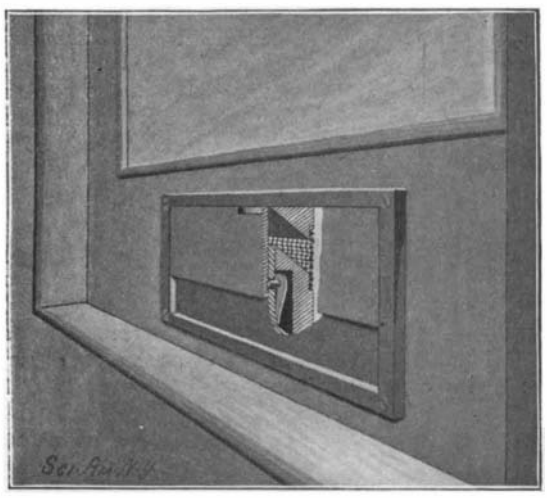
In the usual method of making duplicate sound records for phonographs the blank wax cylinder is first cast and trued with heated tools. Upon the cylinder thus treated the record of sound is engraved or cut. From this record matrices are made, and from these matrices in turn the duplicate sound record is produced. A Newark inventor, Mr. Ademor N. Petit, employs a somewhat different method. The matrix is connected with a suitable support. A hollow core, concentric with the matrix, is secured to the support so that a space is left between the core and the matrix. In this space the duplicate record is made. The usual melted composition is forced into this space by immersing the matrix and hollow core. As the composition advances, air is permitted to escape. When the end of the space has been reached the escape of the air is cut off, thereby preventing the further advance of the composition. Pressure is now applied to consolidate the composition and cause it to fill all the interstices of the matrix. By applying water to the inside of the core the matrix is cooled from within outward. The cooled duplicate sound record is then separated from the matrix and core by a special device.

In another method for duplicating records invented by Mr. Jonas Aylsworth, of East Orange, and Mr. Walter H. Miller, of Orange, N. J., the matrix or mold, carrying on its bore a relief of the record to be duplicated, is immersed in the bath of molten wax composition. This immersion causes the molten material

to fill the bore of the matrix without in any way touching the exterior. The reduced temperature of the matrix relatively to the molten material causes the latter to coagulate or chill upon the bore until a layer of the desired thickness has been secured. After this the matrix or mold is removed from the bath of molten metal, and the bore of the duplicate is finished by a reamer. The resulting duplicate is finally removed from the matrix or mold by shrinkage. The duplicates can be made much thinner than the ordinary original records, and therefore more economically, since the material removed by the reaming tool is used for the manufacture of subsequent duplicates.

AN ADJUSTABLE VENTILATOR FOR WINDOWS.

A simple ventilator for car-windows or other windows, which affords convenient means for adjustment



AN ADJUSTABLE VENTILATOR FOR WINDOWS.

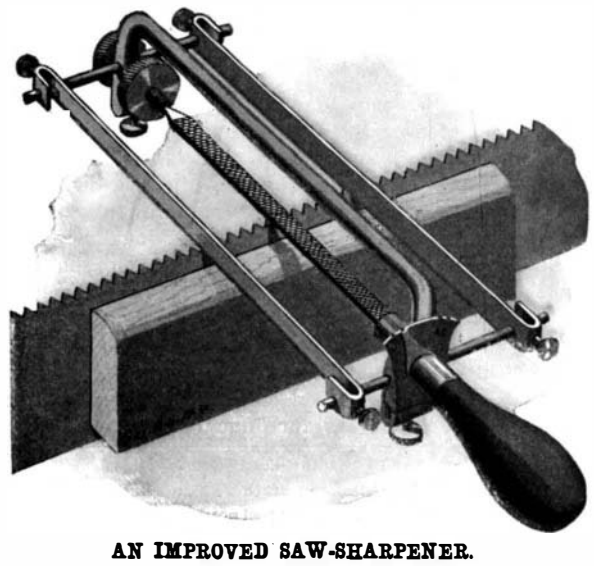
to graduate the opening of the ventilator so as to open it partially or entirely, is the subject of the accompanying illustration. The inventor of the window is David E. Werts, of Grants Pass, Oregon.

The sash is held to slide vertically in the window-frame; and the improved ventilator is placed in the lower rail of each sash. This lower rail has a horizontal slot leading outwardly and downwardly. On the inner side of the sash-rail a recessed guard-frame is secured, which frame is slotted to register with the slot of the sash-rail. The exterior opening of the slot is covered with a woven-wire cloth. Slidable in the recess of the guard-frame is a gate, upon which a plug bears. The plug projects from the free end of a flat spring secured by one end in a cavity in the sash rail, and through a perforation in the guard-frame. It will be seen that the impinging of the spring-pressed plug on the gate will retain the gate at a desired point of open adjustment. The relative position of the plug is such as to adapt it to project its free rounded end through the perforation in the guard-frame for a short distance, so as to support the gate when elevated sufficiently to close the sash-slot completely.

The improved ventilator is of special value as a means for ventilating passenger cars as well as bedrooms, the air being admitted in volume which may be exactly graduated so as to meet all sanitary requirements and to avoid any excess which would cause an improper air current in the room or car.

AN IMPROVED SAW-SHARPENER.

A novel device for sharpening the teeth of saws, which embodies means for deepening the cut and



AN IMPROVED SAW-SHARPENER.

changing the pitch of the saw-teeth, is the subject of an invention for which Ira L. Bulson, of Jacksonville, Fla., recently received a United States patent.

The device consists of an arched frame-bar, the depending limbs of which are slotted. In one limb a screw-plug is fitted, carrying two jam-nuts embracing the limb; and in the other limb-slot a shank is fitted on which a handle screws. Between the shank and the screw-plug the saw-file is held. In order to regulate the depth to which the file shall cut, two gage-bars are provided, located on opposite sides of the frame-bar and adjustable on cross-bars carried by the depending limbs. By means of set-screws operating in conjunction with clips, coacting with the depending limbs of the frame-bar, these gage-bars are adjusted in a vertical direction. In sharpening the teeth of the saw, in the usual manner, it is evident that these gage-bars will limit the depth to which the teeth are cut, so that all the teeth of the saw are uniformly cut. In order to indicate the inclination of the file, the instrument is provided with a gage comprising a graduated face carried by the shank and a movable finger free to travel over the face to indicate the position of the file.

The improved implement is available for use either on cross-cut or ripping saws, and does not require expert handling to secure good results. The gage-bars limit the depth of cutting, which may be nicely graduated by the adjustment of the set-screws, and the rocking adjustment of the index-finger controls the degree of angular inclination given to the body of the file-bar, so that teeth of exact size and pitch can be formed on a saw-blade or defective teeth renewed and rendered perfect.

Requisites of the Perfect Car Coupler.

Many inventors will probably remember the paper read some three years ago by Mr. Pulaski Leeds before the Central Association of Railroad Officers on the subject of "Car Couplers." Mr. Leeds began his paper by asking: "Does the present style of vertical-plane coupler meet all requirements? Has it come to stay?" Mr. Leeds was of the opinion that the vertical-plane coupler was by no means a perfect contrivance, and was still more of the opinion that it had come to stay. He enumerated the conditions and requirements of service; and these he states are: First, that the concussion should be evenly and squarely met on a central line; second, that the pulling strain should be on a central line to avoid all tendency to crowd the flanges against the rail; third, that the connection should be so flexible that there should be no unnecessary friction at any time or difficulty in coupling on any practicable curve; fourth, that the device should be capable of having its strength increased to meet future requirements of heavier motive power; fifth, that it should be always operative; sixth, that there should be as great a uniformity as there was in the link and pin.

Mr. J. B. Thomas now comes to the fore with a paper presented at the St. Louis Railway Club, in which he further discusses the interesting question first opened by Mr. Leeds. The increase of break-in-twos and in the wear of truck-wheel flanges, together with the need of improvements in draft-rigging, have shown that the present coupler may be considered the direct cause of many accidents. In every scrap-heap in the railway yards many couplers may be seen, the shanks of which are broken anywhere from two to eight inches back from the shoulder. From templates constructed according to the strict Master Car Builders' rules it is found that the greatest angle obtainable by two cars in rounding a curve without impinging against the side is 10 degrees. When a greater angle than this is obtained the side motion of the car may produce lateral pressures of from 3,000 to 57,000 pounds on the couplers.

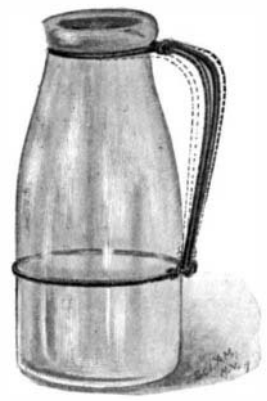
In order to determine the relative positions of two freight cars standing on one of the curves found in the freight yards at St. Louis, Mr. Thomas made an interesting investigation. Of seven sets of intersecting lines of as many pairs of cars, the least angle produced by any two of these lines was 18 degrees. The greatest angle recorded was 28 degrees. None of the cars was over 35 feet long. Any two 40-foot cars would have increased the angle on any of these curves 4 degrees.

In the face of these facts Mr. Thomas believes that a radical departure must be made from the style and dimensions of the couplers now in general use. Their continuation means worn rails, split draft-timbers, damaged carrier-irons, worn wheel-flanges, increased tractive resistance to trains, and an increased number of break-in-twos.

Mr. Thomas has himself invented a coupler for the purpose of avoiding many of the evils which have been cited. He knows that he has not a perfect coupler; but, it possesses certain essentials, nothing short of which will satisfy the demands of the present and the future. Since these essentials may be of some interest to prospective inventors of car-couplers we give them for what they are worth. The essentials are: First, that the coupler will couple on any practicable curve known in railway construction, regardless of any difference in the cars to be coupled; second, by yielding to the varying motion of the cars in rounding a curve, the coupler avoids that terrible strain which cuts away the flanges of wheels, destroys the draft-timbers, and injures the car; third, the coupler is always operative; fourth, it confines the natural wear to certain small parts whose total weight is about 30 pounds, besides which, these parts being relieved from excessive strain by the drawhead's flexibility will wear only about one-fourth as rapidly as will the corresponding part of the coupler now in use.

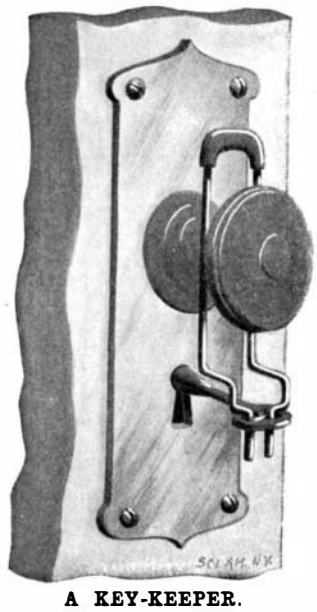
DEVICES CURIOUS AND INTERESTING.

BOTTLE-HOLDER.—A detachable bottle-holder is an appliance which will commend itself to any housewife who knows how difficult it is to grasp the stout glass bottles in which milk is sold in our large cities. The improved holder which we have shown consists of a piece of wire, bent to form a closed and an open loop. The closed loop embraces the body of the glass bottle, and the open loop the neck. The open loop is made to hug the neck of the bottle by means of a clasp embracing that part of the holder which is to be grasped by the hand. The clasp is slipped downwardly on the handle-part in order to release the neck portion of the device and to permit the holder to be removed. Mr. Wilfred H. Goddard, of Chelsea, Mass., is the inventor of the holder.



MILK-BOTTLE HOLDER.

KEY-KEEPER.—The burglar who tries to pick the lock, the key of which is held in the manner shown in our illustration, will probably be disappointed. His efforts would be very effectually frustrated by a key-keeper consisting of a pair of vertical arms having extensions which fit within the ring of the key, so that it is practically impossible to turn the key from the outside. The key-keeper is the invention of Albert B. Lang, of St. Louis, Mo. The invention is obviously a simple and efficient appliance.



A KEY-KEEPER.

HILL-CLIMBING SHOE.—A form of shoe which is rather peculiar is the invention of John E. Fenno, of Hoisington, Kan. Mr. Fenno's shoe is designed particularly to facilitate walking when ascending hills. The invention comprises a vertically-extensible heel-portion arranged to elevate the heel so that the sole of the foot will be in a horizontal position in advancing uphill. The inventor believes that hill-climbing, by means of his invention, will be a far easier matter than formerly, since a more erect and comfortable attitude will be preserved with less fatigue.

HILL-CLIMBING ATTACHMENT FOR SHOES.

MARSH-SHOE.—A Canadian inventor, Mr. Albert Drouillard, of Windsor, Ontario, has invented another peculiar shoe, which is to be used by hunters in pursuit of game over swampy ground. The shoe consists of a flexible disk formed with a rigid rim which prevents slipping. Straps secure the sole of the boot to the disk. Furthermore, an air pipe communicates with the under side of the disk with the heel. The body of the disk acts as a flexible diaphragm, and its action in lifting up the heel is similar to that of a diaphragm-pump. Air is sucked in through the pipe and conducted beneath the disk to permit the ready withdrawal of the marsh-

MARSH-SHOE