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.

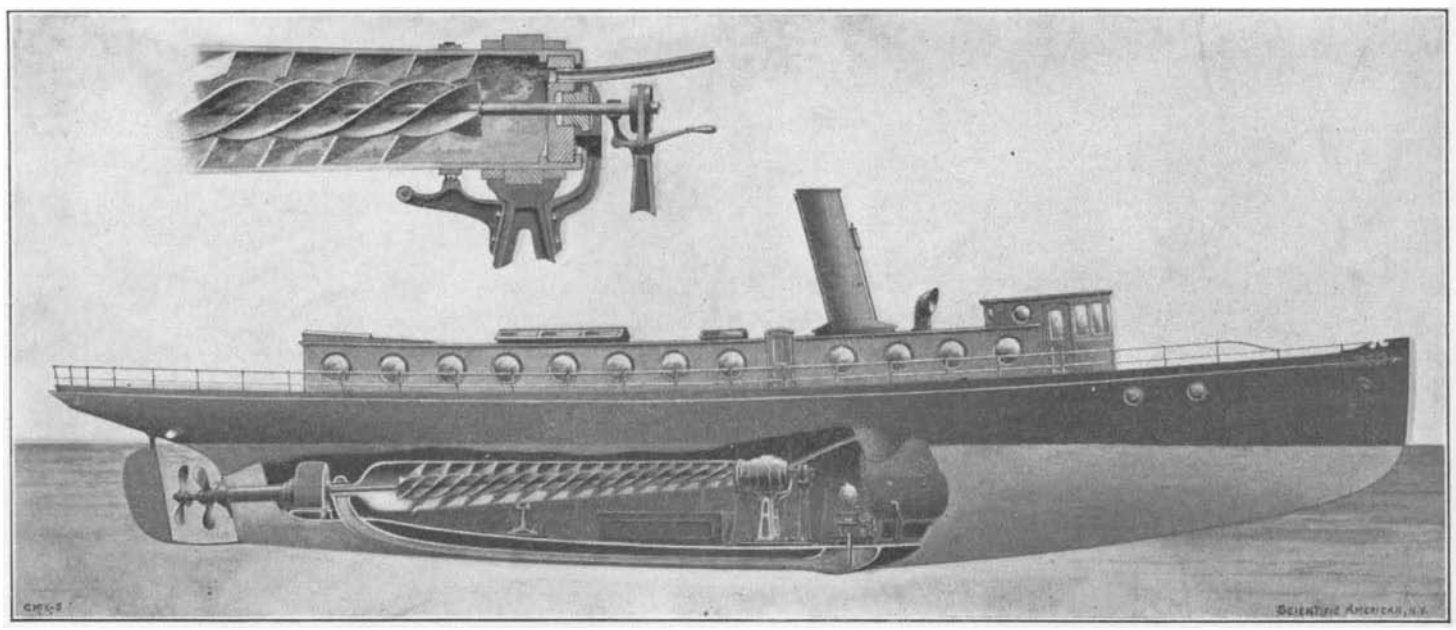
The accompanying illustrations have been drawn to show the details and methods of operation of a marine steam turbine designed by Col. John Jacob Astor, who, after giving much thought to the subject, is convinced that the steam turbine is capable of improvements which will overcome some of the difficulties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