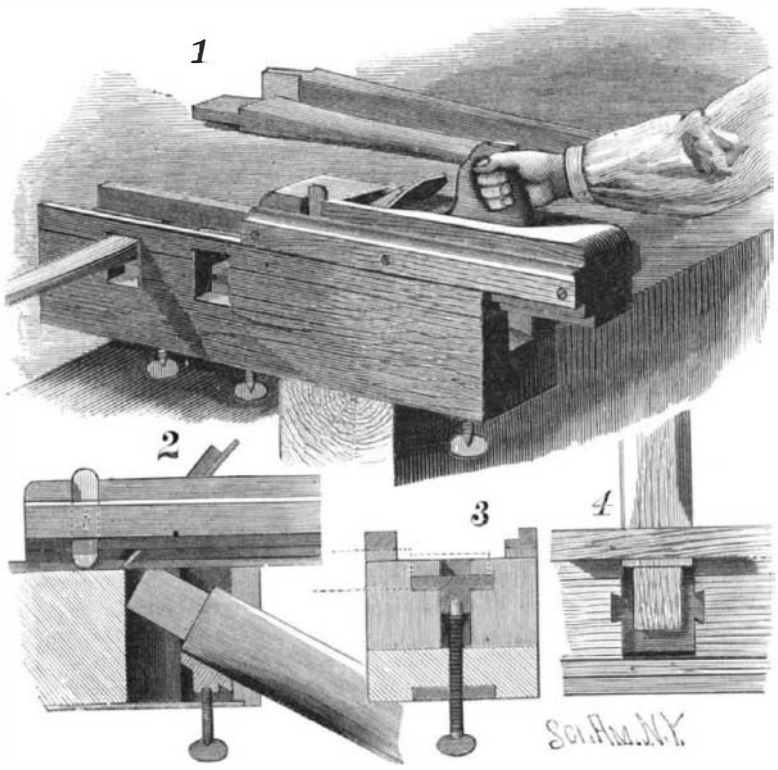
RETENONING MACHINE.

The upper part of the bed of the device, which is secured to the bench, is grooved longitudinally, one side being stepped, as shown in the cross section, Fig. 3. This groove forms a "way" for the plane, which fits in it, and which has a bit and marker like the ordinary rabbet plane. Passing transversely through the bed are one or more rectangular openings having guides on either side, as indicated in Fig. 4, which also shows the spoke in position. Tenon gauges (Fig. 3), having lugs fitting in the guides, have a vertical movement in the holes, and are for the purpose of adjusting the amount of material to be cut from the tenon on the spoke. The rear end of the bed is recessed sufficiently (Fig. 2) to allow the introduction of an inclined guide with a vertical adjusting screw. This arrangement is for the purpose of supporting a spoke while the ends and sides of the tenon are being beveled, so that it will easily enter a mortise. This work is done with the same plane that cuts the tenons. The tenon gauge plates may be of any thickness, or may be of several thicknesses to accompany each machine. When it is desirable to tenon an unfinished spoke, it is put in one of the openings in the bed and the gauge raised until the spoke is above the surface of the groove, and the plane being advanced a shaving is taken from it. It is then turned over, the gauge set, and a shaving taken off, the operation being repeated till the tenon is formed. The same operation is required to retenon a spoke. After the tenon is formed, the edges are beveled as above described.

This useful machine has been recently patented by Mr. John B. Simpson, of Poplar Creek, Miss.



SIMPSON'S RETENONING MACHINE.

Paper Negatives.

At a recent meeting of the London and Provincial Photographic Association Mr. W. Turner gave the following as his method of making paper negatives: The picture or drawing to be copied is made translucent by means of lard diluted with turpentine—one part of lard to three of turpentine

The mixture was then boiled for three minutes, which he claimed killed the grease, and it was then rubbed over the drawing. When surface dry the drawing was placed in a printing frame with sensitized silver paper, and a negative made, which was fixed in an old hypo bath rich in silver, and washed in the usual way.

The plain paper was prepared by floating Saxe paper on the following:

Sodium chloride	200 grs.
Gelatine	30 grs.
Water	20 oz.

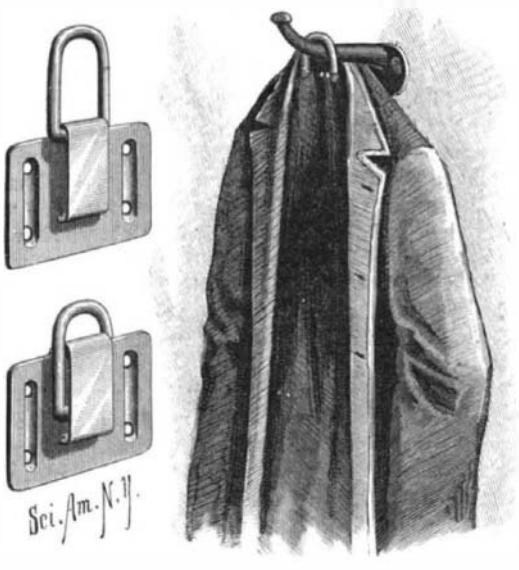
Dissolve the gelatine and chloride separately, and mix; float three minutes. When dry, sensitize by floating one or two minutes on the following:

Silver nitrate	1 oz.
Citric acid	1 drachm.
Water	14 oz.

He stated that the paper would keep good for six weeks.

LOOP FOR HANGING GARMENTS.

In each end of a plate of light sheet metal, made of suitable length and breadth according to the size and weight of the garment to which it is to be applied, are formed two holes through which the plate is sewed on. Upon the upper edge of the plate is formed the end of a narrow tongue, which is bent over the plate so as to form a keeper to receive the ring. The plate is designed to be placed between the body and lining of the garment, the upper part of the ring projecting so that it can be readily drawn out and passed over a hook or nail. When not in use, the ring is pushed down in the keeper.



HARRIS' LOOP FOR HANGING GARMENTS.

This invention has been patented by Mr. William E. Harris, of 414 East 117th Street, New York city.

The New Cunard Steamship.*

The launching of the Umbria and the Etruria, the two vessels which have recently been added to the fleet of the Cunard Company, marks a considerable advance in shipbuilding. It is not long ago that the mere voyage to and from New York occupied from twenty to twenty-four days in its performance, so that a visit to our American cousins could not be undertaken in a holiday which did not at least extend over a month. But latterly the journey from one side of the Atlantic to the other has been made in many cases under seven days, and the Oregon, the Alaska, the City of Rome, the Servia, and the America have all at one time or the other performed this feat.

On Saturday, September 21, the Etruria was launched, and at the lunch which followed it Mr. Pearce, of the firm of Messrs. John Elder & Company, the builders of the vessel, described it and its sister ship, the Umbria, as the most powerful vessels in the world, and prophesied that the records of the Oregon and the other vessels named above would have to give way to those of the new Cunard liners, as he confidently anticipated they would perform the journey in six days. Neither is he disposed to think that six days is the limit, but looks forward to the time when he will be able to build a vessel that should undertake the passage in five days. He thinks that it is a mistake to carry cargo and passengers on the same boat, and advocates the separation of the two branches of traffic, a suggestion which if adopted would almost revolutionize the Atlantic traffic.

At the same time Mr. John Burns, of the Cunard Company, contrasted the first steamer of their fleet with these latest additions, and showed how great the progress during the interval between their being built had been. The Britannia, he says, was considered a wonderful ship forty-five years ago, although she was not half the length of the Umbria and Etruria, being only 207 feet long as compared with 520 feet; her tonnage was 1,155 tons against 8,000 tons possessed by the new vessels, and her horse power was 1,155, that of the Etruria being 12,500, while she never went faster than 8½ knots an hour, whereas it is confidently anticipated that the new Cunarders will go from 18 to 19 knots an hour.

A few words respecting the dimensions, etc., of the Etruria may be interesting to our readers. She is 520 feet long, 57 feet 3 inches broad, 41 feet deep, with a gross tonnage of 8 000 tons, and is a five decker. The promenade deck, which is to be reserved for the use of first class passengers, extends for nearly 300 feet amidships, the full breadth of the ship. On this deck there is a large teak deck house, inclosing the entrances to the saloon, ladies' saloon, captain's room, and chart room; above this is placed the officers' lookout bridge and house for the steersman; and over this is the flying bridge. The extremities of the upper deck are protected aft by a turtle back 75 feet long, which covers the wheel house and hospitals, and forward by a large top-gallant forecastle, extending 110 feet aft from the stem, having below accommodation for petty officers, ice rooms, store rooms, and other conveniences. The music saloon, smoking saloon, several large family state rooms, kitchen, bakeries, sculleries, and other offices, together with the accommodation for the officers and engineers, are situated on the upper deck, and are chiefly contained in a large central deck house 275 long by 32 feet broad.

The smoking saloon is 35 feet long by 32 feet broad, and handsomely fitted up in hard wood. The dining room, 76 feet long, the full width of the vessel, and 9 feet high, is arranged to seat a large number of passengers. The vessel is built to accommodate 720 first class passengers, and the state rooms are fitted up in the most luxurious manner. The lower deck state rooms are made so as to be easily removed and the space utilized for steerage passengers, troops, or cargo. The electric light on the incandescent principle is used throughout the vessel.

The Etruria will be fitted with three steel masts, full bark rigged, in accordance with the style generally adopted by the vessels of the Cunard line, and will carry 12 lifeboats. Steam steering gear is fitted up, but as an additional precaution hand steering gear is also provided. A large steam windlass is placed under the top-gallant forecastle for working the anchors, and five steam winches are fitted at the hatchways for loading and discharging cargo. She is divided into ten watertight compartments, and any compartment may be isolated. She will be entered in the Admiralty list, and rank as a transport of the highest class, being specially designed so as to be adapted for service as a mercantile auxiliary in time of war. The engines, supplied by Messrs. Elder & Company, are of the compound inverted vertical surface condensing type, with three cylinders, one of which is 71 inches in diameter, and two 105 inches, with a stroke of 6 feet. Steam is supplied by 9 circular steel boilers, having in all 72 furnaces, and a working pressure of 110 pounds per square inch. The engines will indicate 12,500 horse power.

* The *Mechanical World* (London).

The Motor Power of the Human Body.

Dr. Marey, of Paris, read a paper on this subject at the International Congress of Hygiene, in which he described the ingenious manner in which he had succeeded in measuring the motive power of the human body in its every movement. Planks, with India rubber coils underneath, recorded, by expelling the air they contained, the exact pressure of the foot. The motions were measured; and photographs, taken in one-thousandth of a second, recorded every attitude during a leap, and where and when the effort was greatest. By such studies, M. Marey had been able to prove that something was gained in the power of walking in quickening the step from forty to seventy-five steps per minute. But the latter figure was the extreme limit; with a greater number of steps power would only be lost instead of gained.

CHARGER FOR LOADING REVOLVERS.

The ring for the shell of the charger is of thin sheet metal, pasteboard, or other material, is about as wide as the length of a cartridge, and about as large in diameter as the diameter of the cylinder of the revolver. One end is formed with an inwardly projecting flange, and the other end flares outward. At one side is an open space about as wide as the lever of the revolver, Fig. 2, the sides of which are connected by a clasp hook. Together with this case is a core piece formed as shown in Figs. 3 and 4. After placing the cartridges in the charger the ends of the ring are hooked together by the clasp, which springs the flanged sides of the ring together a little to prevent the escape of the cartridges in case the charger should be inverted. The charger thus loaded is presented to the open end of the cylinder of the revolver, as shown in Fig. 1, so that the flaring end passes down over the cylinder, the ring being placed with the opening in range with the lever of the revolver. The flange on the ring then pushes the cartridges into the cylinder; the core, being stopped by the cylinder, drops out. The clasp hook is pushed from the hooks by the end of the lever, so as to permit the case to be pushed far enough on to the cylinder to push the cartridges home in the chambers. The case is then pulled off, and is ready to be refilled. This charger will be found very useful in economizing time by being charged beforehand, in order that all the cartridges can be placed in the revolver at once; and it will prove especially convenient in cold weather, when it is difficult to handle a single cartridge with fingers stiffened by cold.

MUNCH'S CHARGER FOR LOADING REVOLVERS.

This invention has been patented by John H. Munch, Sergeant Troop C, 8th Cavalry, San Antonio, Texas.