

**IMPROVED CAR COUPLING.**

The annexed engraving shows a very simple and effective car coupling, which is capable of being readily adapted to cars now in use, and may be used in connection with other forms of coupling. It is, in fact, an improvement upon the old-fashioned link and pin coupling, which thus far has taken the preference over couplings of more recent design. The improvement illustrated is applied to the ordinary drawheads, and is perfectly automatic in its action. It is needless to refer to the advantages of an automatic coupler; the weekly record of the crippling and maiming of trainmen being a sufficient argument in favor of improvements in this direction. The coupling shown in the engraving consists of a link jointed to a link-pin, the latter being inserted in holes made in the drawhead back of the usual holes for the link pin.

Holding pins with enlarged and strengthened heads are inserted in place of the usual link pin. These pins are provided with latches in their heads, which engage the links when the latter drop down into engagement with the pins.

At the end of each car a block attached to the sill is notched to receive the link when not in use, and the link is retained in the notch by a latch. When the cars are to be coupled the latch retaining one of the links is disengaged, and when the drawheads come together the link is tilted by the spring of the drawhead and falls down over the upper end of the pins of the adjacent couplings as shown in the engraving. The link is disengaged by hand, the latch in the top of the pin being first turned. Both links may be used simultaneously if desired.

It will be seen that this coupling is as simple as the ordinary link coupling, while it is automatic in its operation and reliable.

It is the invention of Mr. Geo. W. Vunk, of Brockport, N. Y. All communications in regard to it should be addressed to Mr. B. E. Huntley, of the same place.

**IMPROVED FILTER.**

We give an engraving of a new filter made by the Newark Filtering Company, of 177 Commerce street, Newark, N. J. In this filter the greatest possible filtering surface is provided, and it is capable of filtering the water supply of the largest cities, and is adapted to the use of paper mills, dye works, laundries, steam boilers, etc.

One of the novel features of this filter is the device by means of which the filter beds may be quickly and perfectly cleansed. This device consists of traveling jets of water which may be directed upon every portion of each filter bed.

This filter is constructed mainly of cast iron, and consists of a number of cylindrical compartments varying in depth from twelve to twenty-four inches, according to the quality of the water to be filtered and the degree of filtration required. The several compartments are fastened together by bolts, *f*, forming one apparatus. This affords a very large filtering area in a comparatively small space. The bottom of each compartment is provided with raised studs, upon which finely perforated sheet brass is placed which supports the filtering material.

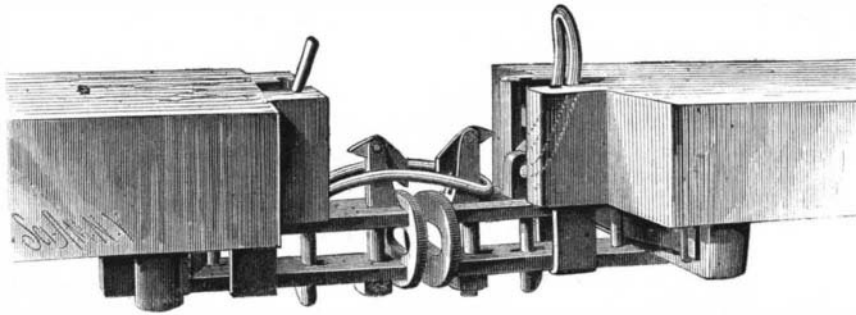
Water is supplied through the valve, *A*, to the main vertical inlet port, *C*, connected with which are the inlet ports, *d*, supplying the water to be filtered to the upper surfaces of the beds of sand or other filtering material. The hand-hole plates, *h*, afford access to all parts. Leading from the space between the perforated brass and the studded bottoms are outlet ports, *g*, which connect with the main vertical outlet port, *D*, delivering the filtered water through the valve, *G*.

In the center of the filter is the pipe, *J*, which is supplied with water from a pump or other source at a pressure of at least twenty pounds per square inch, in order to afford a sufficient force to the jets. This pipe passes through each compartment, terminating in a socket in the lower compartment. To this pipe, which serves as a shaft, are attached smaller radial pipes, *b*, perforated on their under sides at short intervals, one of the smaller pipes being provided for each bed. The inlet valve, *A*, and outlet valve, *G*, are closed, the waste valve, *B*, and washer valve, *J*, are opened, and by slowly turning the central pipe shaft, *J*, by means of the ratchet, *L*, the smaller pipes, *b*, are revolved, and cause the jets of water to disturb the entire depth of all the filter beds. The effect of this is to detach all the impurities, which being of inferior specific gravity, rise and are carried out of the filter through the ports, *d*, and waste outlet, *E*. Above the radial pipes, *b*, are semicircular ribbed plates, *i*, which prevent the sand from escaping with the waste water.

While the washing is taking place the process of filtering is not interrupted for a moment, except where a single filter

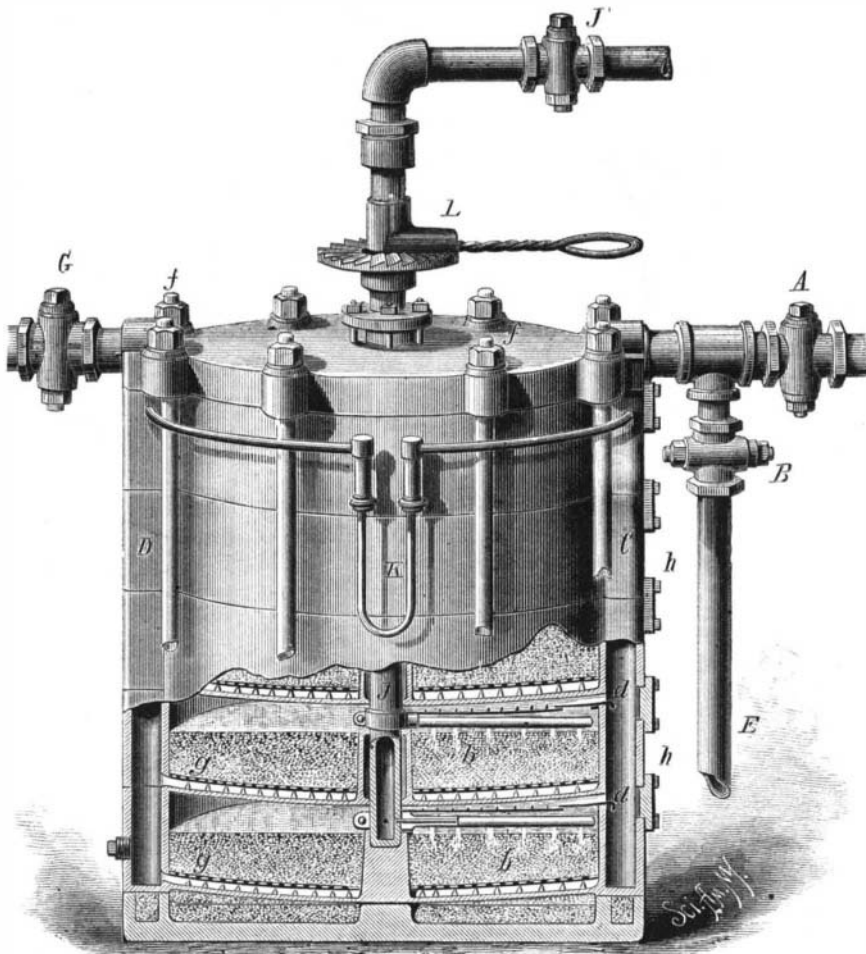
is used, in which case the interruption lasts from three to four minutes. The consumption of water for this purpose need not exceed one per cent of the amount filtered.

All other filters are cleansed either by reversing the current of water or by removing the filtering material. The first-mentioned process only partially accomplishes the object, and the other involves so great an amount of labor and expense (besides its impracticability) as to preclude its general adoption. The facility with which this filter can be cleansed insures a perfect filtration, and prevents any pollution of the filter bed by the presence of decayed animal and vegetable matter.

**VUNK'S CAR COUPLING.**

The mercury gauge, *K*, connected with the inlet and outlet, indicates exactly the amount of resistance per square inch offered to the passage of the water through the filter beds, which resistance increases in proportion to the accumulation of silt and to the volume of water passed through. When the beds are clean they will offer a resistance of about one pound per square inch, and when the gauge indicates about four pounds the filter beds should be washed.

In this filter the sand is kept clean and always in a condition for effective work, and the large area required by the old method of filtration through beds of sand is reduced to a minimum, and the area is further diminished by placing the beds one above the other, from three to ten sections high. This enables the manufacturer to place the filter in a

**THE MULTIFOLD FILTER.**

mill or building where it will not take up a floor space of more than one three-hundredths part of the area required by the old style of sand bed.

The interior pipes are of brass, and the iron parts are protected against corrosion. It will withstand a high pressure, so that water may be forced through it for reservoirs, boilers, etc., or it may be used under a low head. For high pressures the case is made of wrought iron.

The filter in its original form was the invention of Mr. P. Clark, of Rahway, N. J. It has been brought to its present state of perfection by Mr. John W. Hyatt, a prominent inventor of Newark, N. J.

**RECENT INVENTIONS.**

An improvement in washing machines has been patented by Mr. Flavius L. Wickham, of Racine, Wis. This invention relates to washing machines using corrugated rollers, which are moved back and forth over the clothes, and the improvement consists principally in constructing said roller with long and short ribs, whereby, when the roller is moved back and forth, it will pound the clothes, and at the same time exert a rubbing action upon them between the several corrugations of the roller and of the tub in which the roller works. Said roller is journaled in side bars which are in pivoted connection with crosspieces that carry the main handle, and which side bars are united at their top by a hinged handle to facilitate the taking of the roller out of the frame when required. The cover of the tub is sufficiently narrow to pass between the side bars of the roller frame, which consequently is guided by the cover in a straight line when reciprocated, and the roller is free to adjust itself to the unevenness of the clothes in the tub.

An improved air-cooling apparatus, which has been patented by Mr. Alfred C. Garratt, of Boston, Mass., provides in a very simple manner either for directly cooling the person or for cooling apartments. It consists of a vessel filled with one or more ice-holding racks, and having an opening in its top for the admission of air, and a series of discharge apertures below the ice having collars secured in them, over which caps may be placed or pipes for distributing the cooled air be fitted. A fan blower is or may be arranged on the

vessel for producing a forced current of air through it, which blower may be operated by hand and the whole device be made portable.

A very convenient and useful wagon stake has been patented by Mr. Eugene F. Chapman, of Scribner, Neb. In this improvement the stake proper is formed with a shoe at its bottom for fitting it upon the end of the bolster to which it may be bolted under the wagon box. The upright portion of said stake is chambered out to receive within it a vertically sliding extension, which has a hook on its upper end that fits over the edge of the box when the extension is wholly inclosed in the stake. The back of this extension is formed with a series of holes, as is also the back of the stake, for supporting the extension, by a rod or brace and pins fitting said holes, in various positions, as, for instance, in a position for supporting a hay or straw rack, or in a position for holding sideboards upon the box, or again in a still different position for supporting a temporary cover over the box or wagon, the bolsters of which are fitted with similar stakes on opposite sides of the wagon.

Mr. James England, of New York city, has patented an ingenious improvement in crozing tools for cutting grooves in the ends of the staves of a barrel to receive the ends of a barrel head. In this improved croze a hollow elliptical tool holder is used. This holder is formed with open ends and with a series of outer longitudinal guide ribs, each of which has a different radius to adjust the holder to the inner surfaces of staves of barrels of different diameters. It also has an inner annular rib near one end of it. The continuity of the outer ribs is interrupted by a like number of longitudinal apertures in the center of the holder. An opposite pair of these longitudinal apertures serve to receive through them a crooked handle rod to which may be secured, by wedges, either a saw or a series of lances, routers, or cutters, for cutting the groove in the barrel at the desired distance from its edge, and subsequently, in place of these cutters, a gouge for beveling the edges of the groove. These cutting devices project through one of the longitudinal apertures in the holder, at the rib having the same curvature as the barrel. The handle rod has a stud above its crook and a longitudinal flanged plate below, and fitting said rod and its plate, so as to be adjustable up or down thereon, is a handle plate having a hook for holding it in proper position on the rod plate. This handle plate being adjusted to rest on the end edge of the barrel, the croze is passed several times around the barrel to cut the groove, and afterwards similarly operated to bevel its edges.

Mr. Abiathar Blanchard, of South Norwalk, Conn., administrator of Dexter Dennis, deceased, has patented an improvement in hats. The object of this invention is to increase the strength and durability of hats made of chip and other materials. The sweat-band and brim lining of the hat are made in one piece, which may be of waterproof paper, and the same be glued or otherwise cemented to the brim and body of the hat, also be further secured, if desired, by the stitching that fastens the band to the hat-body. Said piece or lining may be first formed of annular shape, and its inner part, which is afterward bent upward, be scalloped or notched. Such combined lining and sweat band is free from

all folds or seams to press against and hurt the head of the wearer of the hat, which it materially serves to stiffen and strengthen.

**IMPROVED CAR TRUCK.**

The common difficulty with ordinary iron car trucks is that the beams to which the axle boxes are attached will sag when the car is loaded, thereby twisting the axle boxes, tending to bring all of the pressure on the inner edge of the box. The engraving shows an improved car truck in which the beams to which the axle boxes are attached are made very rigid by form and arrangement of the bars of which it is composed.

The upper bar is bent or arched in the usual form, except at the ends; and the lower bar is bent sufficiently to join the upper bar at the ends where both bars are bent downward at an angle corresponding to the angle of the lower bar.

The axle boxes are sloped on the upper sides to correspond with the angle formed in the end of the beam, the apex of each box being on the vertical central line of the box. The upper and lower bars meeting at this point form a bearing which transfers the weight thrown on the beam or truss to the center of the box. The weight is thus evenly distributed instead of being secured by the inner edge of the box.

This construction remedies the great defect of the ordinary iron truck—that is, the tendency to sag down by the pressure of the load.

This improvement has recently been patented by Mr. Edward B. Meatyrd, of Lake Geneva, Wis.

**Cattle Restaurants.**

The latest wrinkle in connection with the transportation of cattle is that of Mr. Tingley, of the Humane Live Stock Express Company. Some time ago the same gentleman invented a feed car, theoretically good but practically a failure. The grain and water were placed on the roof, and passed down by pipes when required; but the troughs in the crowded cattle cars got dirty, and the animals refused to eat out of them. An attempt was then made to substitute cars with compartments, so as to keep the cattle separate, but this rendered the cars unfit for any other purpose on the return trip, and was abandoned.

Mr. Tingley's present scheme is a simple one. It is to establish a number of "cattle restaurants" along each line of railroad that transports live stock. They will be two hundred miles apart, and the cattle can be fed and watered every twelve hours. When a train with a load of cattle on board gets within twenty miles of one of these restaurants, a telegram will be sent to the officer in charge, and when the train arrives everything will be in readiness. Great iron cups, about as large as and something of the shape of a good-sized kitchen pot, will contain food and water, run into them through rubber pipes from tanks above. The train will stop between two rows of these troughs, those on one side containing water, and those on the other side holding four quarts of food, consisting of a mixture of ground corn, oats, and cut hay. Each car will have sixteen openings on each side, all of which can be easily closed when the car—which need be nothing more than an ordinary cattle car, such as is at present used—is required for other purposes on the return trip. The device for moving the water and feed troughs to the openings is not complicated.

**"Old Ironsides" Retired.**

The historic frigate Constitution, for some time used as a school-ship, has been put out of commission as unseaworthy and beyond repair. She now lies at the Brooklyn Navy Yard.

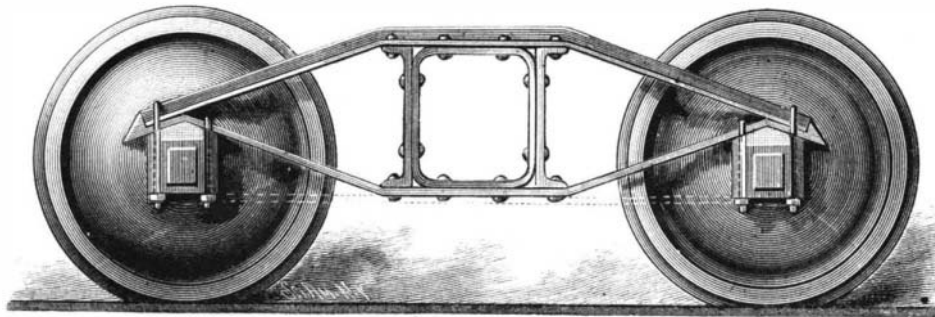
The Constitution was one of the largest of six frigates whose construction was ordered by Congress on March 27, 1794. She was launched in October, 1797. She was built in Boston, of the best live oak, and cost \$302,718. She began her career in the Tripolitan war in 1804, engaging against batteries mounting 115 guns at Tripoli, and her broadsides assisted in recapturing three hundred American sailors who had been captured by the Tripolitans from on board of the frigate Philadelphia. In the war against Great Britain, in 1812, she gained her famous victory over the British frigate Guerriere on August 19. On December 26 following, the Constitution had an engagement with the British frigate Java, and after a hot contest took her as a prize. The following year, on a cruise on the coast of Guiana and among the Windward Islands, she captured the British sloop-of-war Picton, a letter-of-marque, and several merchant vessels. She barely escaped being captured by a British fleet in 1814 by taking refuge in the harbor of Salem, Mass. On February 20, 1815, during another cruise, she captured, after an action of forty minutes, at night, the British frigate Cyane, and the British sloop Levant. The latter was recaptured by a British squadron off the harbor of Porto Praya, and Capt. Stewart, of the Constitution, fearing that the neutrality of the port would not be observed, ran away with his other prize. The Cyane arrived at New York in April, 1815, and the Constitution a month later.

Several years ago the ship was condemned by the Navy Department to be broken up, but gained a new lease of life

through the publication of Holmes' poetic protest, familiar to every schoolboy.

**Preservation of Cross Ties.**

Colonel A. Hanson, Superintendent of the Texas Central Railroad, has had creosoting works constructed at Houston, for treating cross ties, with a capacity of 760 pieces a day. The reservoir tanks are three in number, and will contain 4,000 barrels of crude oil. The cost of this oil is 11 cents in Galveston. The cost of each tie, when creosoted, is \$1.10. The tanks are constructed of brick and Portland cement. The timber is loaded upon low tramway cars. These are drawn by machinery and an endless chain into the reservoir cylinders, which are then sealed, and the process is therein completed, after which the cars are withdrawn. In the yards of the company are immense quantities of bridge tim-



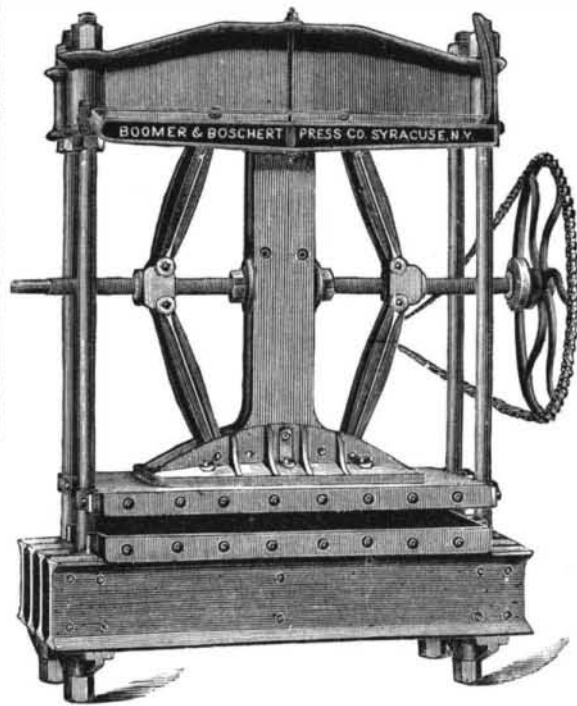
MEATYARD'S CAR TRUCK.

ber and ties awaiting treatment. One of the advantages of this process is the fact that the common loblolly pine, which is regarded of so little value, and which exists in such immense quantities in Eastern Texas and throughout many parishes in Louisiana, is the most suitable wood for creosoting, as it requires an open, porous timber and rapid treatment.

**IMPROVED POWER AND HAND PRESSES.**

This press is used for material requiring heat to vulcanize or otherwise properly finish it. It has two hollow plates, one of which forms the platen, and the other is placed on and forms part of the base of the press. These hollow plates are heated to any required degree by steam or hot air, and are planed smooth and true on the surfaces which come in contact with the material to be pressed.

The base of the press being made of four heavy 15-inch wrought iron I beams, bolted together with separators, is very rigid, and is designed to prevent the deflection of the lower steam plate when under great pressure.



BOOMER & BOSCHERT'S FIBER PRESS.

The principle for obtaining the pressure is the well-known device of a horizontal screw with right and left hand threads drawing the toggle levers to a perpendicular while it is held and controlled by the collars on the screw bearing against the central sliding standard. The press is well designed to withstand the great strain to which it is subjected. It is worked by power by a chain belt passing over a wheel on the end of the screw and being driven by a suitable counter-shaft. This press has an "indicator," showing at all times the amount of pressure being applied to the material under pressure.

The Vulcanized Fiber Company, Wilmington, Del., have recently put a press of this description, with plates 43 in. x 67 in., into their extensive works.

This is only one of the many uses to which the manufacturers of these presses have applied this principle, as they have been making a specialty of presses for many years, and are continually finding new uses for their machines and designing new styles to meet the demands of their customers. Their presses, being more simple and cheap, and capable of

exerting enormous pressure, are rapidly superseding the hydraulic, which has long taken the lead.

Further information may be obtained by addressing Messrs. Boomer & Boschert, 96 West Water Street, Syracuse, N. Y.

**Chloroforming During Sleep.**

The possibility of chloroforming a person in sleep, without waking him, having been disputed in a recent murder trial, Dr. J. V. Quimby, of Jersey City, was led to test the question experimentally. The results were presented in a paper before the section of Medical Jurisprudence at the meeting of the Medical American Association, a few days ago. Dr. Quimby made arrangements with a gentleman to enter his room when he was asleep and apply chloroform to him. This he did with entire success, transferring the person from natural to artificial sleep without arousing him. He used about three drachms of Squibb's chloroform, and occupied about seven minutes in the operation.

The second case was a boy of thirteen, who had refused to take ether for a minor operation. Dr. Quimby advised the mother to give the boy a light supper and put him to bed. She did so, and Dr. Quimby calling when the boy was asleep, administered the chloroform and performed the operation without awakening the boy. The third case was a boy of ten years suffering from an abscess, and the same course was pursued with equal success.

Two important inferences may be drawn from these cases, Dr. Quimby said. Minor surgical operations may be done with perfect safety and much more pleasantly than in the ordinary way; and, secondly, a person somewhat skilled in the use of chloroform may enter a sleeping apartment and administer chloroform with evil intentions while a person is asleep. Hence the use of this drug in the hands of a criminal may become an effective instrument in the accomplishment of his nefarious designs. —*Medical Advance.*

**An Exhibition of Postage Stamps.**

An exhibition of stamps by a society in Vienna has brought out some curious information relative to its branch of postal affairs. Some of the collections exhibited were of considerable historical interest and value, notably that of Dr. Moschkan, collected during the Franco-Prussian war. It contained the stamps and the envelopes of the German and French field post-offices, and of the field post-office of the Swiss corps of observation, a postage stamp from Alsace, issued by the North German Bund, August 1, 1870, balloon letters from Paris and Metz, the photographically reduced letters for the pigeon post, stamps issued under Gambetta's dictatorship, and others by private firms who managed the postal communication during the Commune. He exhibited the first stamps of the German Empire and of the French Republic, and one which bears the head of the Count de Chambord, issued by the Legitimists in 1870, in anticipation of a Bourbon restoration.

Among the portraits of postal reformers which graces the walls of the exhibition were those of Sir Rowland Hill and the Duchess de Longueville. This heroine of the Fronde introduced envelopes in 1635 for letters carried by the Paris city post. Envelopes with an impressed stamp were used first in Sardinia in 1819. The Spanish stamps reflect, in the heads of Isabella, Amadeo, Don Carlos, and Alfonso, the dynastic changes that have taken place. A collection of Spanish stamps from 1850 to 1853 is valued at \$150. The Austrian stamps, including those for Holstein under the Austrian occupation, and for Bosnia, amount to 2,262 specimens. There are 120 postal cards belonging to the General Postal Union, and a good collection of forged stamps was shown expressly for the benefit of collectors. The verdict of the visitors was that our stamp with the head of Washington was the most beautiful one in the exhibition.

In connection with this exhibition, some figures of the operations of the General Postal Union may be interesting. It extends to twenty-five States and to the British, French, and Dutch colonies. It forwarded, in the year 1879, 4,949,000,000 letters and cards. This total may be divided into 3,481,000,000 for Europe, 1,246,000,000 for America, 175,000,000 for Asia, 11,000,000 for Africa, and 36,000,000 for Australia. Including newspapers, printed matter, and samples, the Postal Union forwarded 6,776,000,000 packages, of which 5,285,000,000 belong to Europe.

Of the various European nations the English write the most letters. The figures for 1879 are 1,176,400,000 for England, and 553,000,000 for Germany. But the economical Germans sent 123,000,000 postal cards, while the English used only 114,000,000. It is reckoned that in the whole world the daily requirements are 13,000,000 letters and cards, giving every inhabitant of the globe a yearly average of 3½ written communications. The annual average of European countries for each inhabitant is: England, 36; Switzerland, 25; Germany, 18; Holland, 17; Belgium, 15; France, 14; Denmark, 13; Austria, 11. In England there is a post office for every 2,463 inhabitants; in Germany, for every 5,037; in Austria, for every 5,498; and in France, for every 6,242. Switzerland possesses the most post offices in proportion.