

SCIENCE AND INVENTION



WAY TO KEEP OVERSHOES ON

Pennsylvania Woman Designs Band to Fit Around Ankle With Hook Fastened to Button.

Any person who has ever had an overshoe come off while crossing a muddy street will appreciate the fastener device designed by a Pennsylvania woman to prevent this annoying accident. An elastic band fasteners around the ankle and this supports a suspender-like arrangement at the heel of the overshoe. Attached to one side of the gumshoe is another elastic supporter, with a hook which engages a button on a button shoe, or a hook on a lace shoe. It takes only a few seconds to fasten the overshoe on with these devices, and it is worth the trouble. After a rubber has once come



Fastened in a Twinkling.

off in the mud, and it usually does this when you are going somewhere you want to look your best, there is not much use in putting it on again. The attachments are made so that they can be removed from the overshoe when not needed and quickly put on again.

THEORY OF EARTH MOVEMENT

Sir George Darwin, Noted English Scientist, Delivers Interesting Address on Tides.

Sir George Darwin, the noted scientist, who was the guest of the Authors' club in London recently, delivered an interesting address on his theory of the tides. Everybody knows that the tides are due to the moon's attraction. In the tidal motion the movement of the water causes friction and a consequent slowing down of the motion of rotation of the earth, as a brake would do. The effect, though almost infinitesimal, becomes appreciable in time, although it has not yet been measured. But it must exist, and this slowing down being due principally to the moon it must be accompanied by a reaction on it, with the result that the moon will move further and further away from the earth, owing to the yielding of the system. The opinion of many authorities is that the moon was shot off from the earth at the portion now filled by the Pacific ocean. As it is still moving further away and the rate of rotation of the earth diminishing the time will come when the length of the day and that of the lunar month will be the same, and the earth and moon will again revolve as a rigid body. When that occurs the day will be 55 times as long as our present day. But the sun also produces tides and similar effects, though on a smaller scale. So the year, too, will be lengthened.

COMPASS FOR THE AVIATORS

Device Invented by Englishman Is Combination Known as "Shadow-Plate"—Directs Aeroplane.

A device, which is to direct an aeroplane in the same manner as a compass directs a ship, has been invented by an Englishman. It is an ingenious combination of the sundial and the compass, and is known as a



An Aviator's Compass.

"shadow-plate." Its dial is of celluloid, and in the center is a small pin that throws a shadow as the light passes through, says the Popular Mechanic. When it is fixed to the forward part of the upper plane of the aeroplane, the aviator can tell the course he is taking by the variations of the shadow.

Disinfect Books.
In most public libraries all books are disinfected when they are returned. They go into all sorts of places and are read by sick people in their homes and in hospitals. Hence the precaution.

Opals Expand With Heat.
Opals expand with heat to a greater degree than any other precious stones. They are frequently lost because the expansion forces open the gold bands in which they are set.

SWEDISH RAPID FIRING GUN

Eleven Hundred and Twenty-Five Shots an Hour Fired From Weapon That Is Carried in Hand.

Ever since men began to kill each other, which was very soon after sea fish interests began to clash, a good share of their leisure time has been devoted to the elevating of inventing instruments for that killing.

It is curious that crudities still appear in the weapons which the geniuses of centuries have labored to perfect and that our eye should be opened at this late day to almost ludicrous imperfections in our most cherished killing machine, the rifle. Yet it is only a few years since the smoke of black powder was done away with and comparatively a matter of days since Maxim produced his sound-choking flame-suppressing device. And now comes news from Sweden that an inventor there has found means, at last, to stop the kick which has made sore shoulders from the time the first blunderbuss was discharged, and has constructed a weapon that will drop men so fast that a single marksman may dispose of a regiment in an hour.

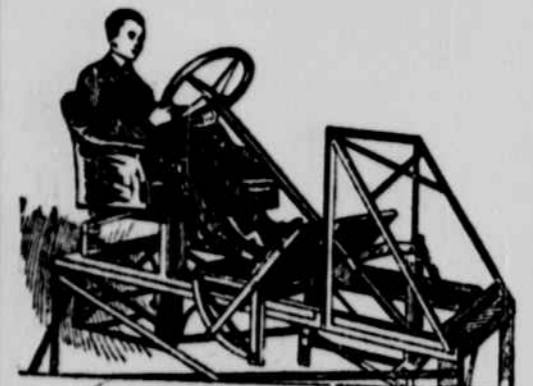
Eleven hundred and twenty-five shots to the hour from a gun that is carried in the hand and fired from the shoulder is a high record. If that gun is smokeless and kickless, it is convenient to handle and but little trouble to operate.

The weapon has already taken rank with the most approved and will doubtless become a part of the armament of many of the world's armies.

FIT AUTOMOBILE TO OWNER

Nearly All Large Factories Do More or Less Custom Work in Adjusting Machines.

Nearly all of the large automobile factories do more or less custom work in fitting automobiles to their prospective users in very much the same way as a clothier alters ready-made suits or overcoats to fit purchasers. The great difference in the length of arms, legs and body sometimes makes it more comfortable for the owner of a car if the position, distances, and angle of the seat, footboard, and steering wheel are made accordingly. The framework shown in the illustration is the adjustable means by



Measuring a Man for an Automobile.

which one concern makes measurements for such cases, says the Popular Mechanic. The seat can be raised and lowered, the footboard tilts to different angles, and the steering-wheel rod can be shortened or lengthened.

INDUSTRIAL AND MECHANICAL NOTES

By the addition of pulverized mica concrete is made to imitate granite.

The Japanese make vegetable isinglass from six varieties of seaweed.

Soda will brighten china that has been burned or darkened by long use.

The American shoe manufacturer is extending his sales in all parts of the world.

Many shoes sold abroad as "American-made" are not such in any particular.

Pulverized street rubbish and coal tar have been found to make good fuel briquettes in Amsterdam.

A sash lock makes an effective substitute for a bolt on a door if the door and casing are flush with each other.

Interesting tests in Germany have shown that pens made of tantalum outwear those made of steel or gold.

Cement for joining wood with metal can be made by mixing litharge with sufficient glycerin to form a paste.

An ingenious German baker utilizes a windmill to mix and knead his bread as well as to grind his grain into flour.

Iron has been smelted in Sweden for more than 2,000 years and some of the ancient furnaces still are in existence.

Japan's newest battleship also has become the speediest by the installation of American turbine engines and propellers.

If a little chalk is rubbed on a file before filing steel it will prevent chips sticking to the file to scratch the work.

A machine to hold a drill by which it may be sharpened by hand on an ordinary whetstone has been invented in England.

In driving keys for cast-iron pulleys, drive lightly until the key is tight, then give just one smart blow with the hammer.

English engineers have succeeded in building a paper-making machine that will turn out 650 feet of news paper, 17 1/2 inches wide, a minute.

Deposits of copper ore have been discovered on the Vestmanna Islands south of Iceland. The deposits are understood to be of considerable magnitude.

INDUSTRY AND MECHANICS



NAILING MACHINE IS HANDY

Oblivates Necessity of Holding Nails in the Mouth and Prevents Bruised Fingers.

This machine, which is specially designed for nailing shingles, relieves a workman from practically all trouble except that of hitting the nail on the head and of moving the machine into the next position. The nails are dumped into the hopper, in the bottom of which are three parallel slits. The vibration of the machine in use causes the nails to drop point downwards into the slits and hang by their heads. Thence they pass into a similar slit in



An Improved Nailing Machine.

the incline, and slide, still hanging by their heads, down to the catch spring. This spring holds the nail under the plunger which sets the nail in the material.

The machine can be used with the hands protected by gloves or mittens, and it obviates the necessity of holding nails in the mouth, and prevents bruised fingers.

WEIGHING SCOOP SAVES TIME

Grocer Can See at Glance the Weight of Tea or Sugar Without Resorting to Scales.

A weighing scoop that is scoop and scales in one has been designed by a Philadelphia man. At a glance the grocer can see the weight of the sugar or tea or whatever he may have in the scoop without resorting to the scales and losing that much time. The handle of the implement has a downwardly projecting arm running parallel to the back of the scoop, which is hinged to the bottom of this arm and fastened by a spring to the upper portion. A tape with weight divisions on it con-



A Weighing Scoop.

nnects the handle and the scoop, and when the latter has anything in it the tape will be drawn out to the point which indicates the weight of its contents. With an implement of this kind the grocer can go ahead and fill bags by simply dipping the goods out of a bin and consulting the tape, instead of first shoveling into the scales scoop and juggling with a set of weights.

INCREASED USE OF CEMENT

More Used in the Year 1909 Than in Any Other in History—Also Price Was Lower.

More cement was used in the United States in 1909 than in any other year in its history, and the price by the barrel was lower. In 1908 the production was 52,910,925 barrels, valued at \$44,547,679; in 1909 the production was 64,196,386 barrels, worth \$51,232,979 at the mills. In 1908 the average price of a barrel of Portland cement was 85 cents; in 1909 the price averaged 81 cents produced at 103 plants in the country. Twenty-one plants were in Pennsylvania, twelve in Michigan, ten in Kansas, eight in Ohio, seven in New York, six in Indiana, five in Illinois and five in California.

In 1880 a barrel of Portland cement brought three dollars, due to the scarcity of the material whose production developed upon slow, crude processes. Today it is manufactured to sell at 80 cents a barrel and show a profit. Most of the cement produced is consumed in the United States, the export product ranging from one to three per cent, annually. With the immense natural resources for its manufacture, however, it is anticipated by government authorities that in the near future the foreign trade in cements will show large in the sum of the nation's export trade.

Depths of the Sea.

The greatest ocean depth recorded is at Nero Deep, in the north Pacific—5,269 fathoms.

FAMOUS FARM SAUCES

OLD RECIPES HANDED DOWN THROUGH GENERATIONS.

Many Have Been Patented and Acquired World-Wide Reputations Such as Originators Never Dreamed of—Tomato Mustard.

Country farmhouses years ago possessed a good many other treasures besides their tallboy chests and their carved oak presses, although most of these treasures seem to have vanished nowadays.

In the days before every village market town had its city products, and itinerant peddlers were the chief salesmen, they thought, in fact, a great deal of their own old recipes for home-made sauces. They were made according to directions which were handed down through generations, and formed the special pride of many a busy housekeeper. As a matter of fact, many of the old recipes have become patented, and the original has acquired a world-wide reputation such as its originators would never have foretold for it.

Among the forgotten recipes is one for tomato mustard, which is worthy of the consideration of those whose stock of tomatoes is greater than can be used for cooking and salads.

To two gallons of tomatoes three peppers should be added when minced, and these must be placed in a large preserving pan with a tablespoonful of freshly ground black pepper, an ounce of powdered ginger, a quarter of an ounce of cloves, half an ounce of mixed spice, two ounces of salt and the grated rind of a lemon. These ingredients should be well minced together and boiled for an hour to an hour and a half. At the end of that time the contents of the pan should be allowed to cool, and when cold an ounce of curry powder and an ounce of powdered mustard added, with a breakfast cupful of vinegar. This mustard mixture should be bottled and corked down tightly.

Another sauce which is equally excellent to eat with cold roast or boiled meat is also made of tomatoes.

To a gallon of tomatoes a full breakfast cupful of minced red peppers and a large cupful of minced onion should be added, the tomatoes having been cut up very small. Half a pound of brown sugar, in half a teacupful of salt—or less if this is considered too much—a small teacupful each of powdered ginger, cloves and cinnamon, can be worked in with half a teacupful of grated nutmeg; and rather less of powdered mace. To all these should be added a pint and a half of vinegar, and the ingredients turned into a preserving pan and boiled for three hours.

Hot and Cold Tartare Sauces.

Cold—Put the yolk of one egg into a bowl with one teaspoon of dry mustard, one level teaspoon of salt and just a little bit of cayenne pepper. Stir with a wooden spoon until smooth; then add one-half cup of salad oil and three tablespoons of lemon juice or vinegar, a few drops at a time, stirring quickly all the time. When the sauce is thick and smooth add one tablespoon each of chopped parsley, capers and gherkins and one teaspoon of very finely chopped onions. Keep cool until wanted for use. Serve with cold fish.

Sauce Tartar (hot)—One tablespoon vinegar, one teaspoon lemon juice, one-half teaspoon salt, one tablespoon of walnut catchup or table sauce, two tablespoons butter. Mix vinegar, lemon juice, salt and catchup together and heat over hot water. Brown butter in another pan, and strain into the other mixture. Nice for broiled fish.

Baking Powder Biscuit.

Sift together three times one quart of flour, two teaspoonfuls of baking powder and a teaspoonful of salt. Rub in quickly and thoroughly with the tips of the fingers one tablespoonful of lard and butter mixed. Add slowly one cupful and a half of milk. Mix lightly, with little handling. Turn out on the molding board, roll into a sheet a half-inch thick, cut out with a small round cutter, and lay in a greased baking pan, so they will not touch. Bake in a very hot oven for about twenty minutes.

Clean Shelf Papers.

The next time you are cleaning the pantry shelves, fold at least three newspapers the longest way of the full sheets. Place them on the shelf with the fold in front and fit snugly. The next time you want a clean paper slip the edge of a knife along the fold of the outer sheet and remove the soiled top. The remainder of the sheets will be left intact for future use, and much time and labor will be saved to the housewife.

Chocolate Jumbles.

One-half pound of chocolate, one pint of molasses, one cup of sugar, one cup of butter, one teaspoon clove, one teaspoon cinnamon, one teaspoon allspice, two teaspoons soda, one cup hot water, three eggs, flour enough to roll without sticking.

Cider Apple Sauce.

Boil down the cider, use newly dried apples, pared and quartered if sour, allow one-fourth their weight in sugar or use late sweet apples, pared and quartered, very little or no sugar. Cook slowly, and be careful not to break the fruit in stirring.

WAY OF DOCTORING MASONRY

Germans Adopt Method That Entirely Oblivates Necessity of Tearing Down Cracked Walls.

Ingenious Germans of Hamburg recently have adopted a method of doctoring masonry that entirely obviates the necessity of tearing down cracked and decaying walls.

In the city of Hamburg two crumbling railway bridges were used in the experiments. They were 51 feet in the arch spans, and cracks had appeared everywhere, so that the structures barely hung together. Holes were bored through the masonry to get to the depths of the cracks and a watery cement mortar was pumped in under a pressure of five atmospheres until all the crevices were filled. When this had hardened it was found that the bridges were as firm under all tests as new masonry, and were not even disfigured by the process.

To the antiquary as well as the practical engineer, this should appear as a boon, for ancient stone structures with historical associations, which become dangerously weak can be given a renewed youth without rebuilding or destroying any of the marks of venerable age. In this country more bridges and other stone structures are torn away because they no longer accommodate their needs, than because they are outworn, but there may come a time in America when we shall have occasion to do a little patching, and the German methods will serve excellently.

PUTTY KNIFE IS IMPROVED

Scraper Attachment Leaves Blade Free for Spreading—Advantage Over Old Style.

Painters and glaziers will find a great convenience in the improved putty knife designed by a New York man. The invention is a small one



Improved Putty Knife.

and the need it fills could scarcely be called a crying one, but it has distinct advantages over the old-style knife. The new knife has a slot running across it near the end and in the slot a scraper blade is pivoted on a hinge. When not in use the scraper lies flat along the knife blade, but it can be opened to abut the blade at right angles. The putty is placed on the end of the knife and, with the thumb pressed against it, is laid along the edge of a window frame, or wherever it is to go, as in the old method. In scraping off the superfluous putty, however, it is not necessary to remove that from the knife blade and use the edge of this blade, as was formerly the case. The scraper attachment on the new type does this work even more effectively and the end of the knife is kept clean.

Age of Fish.

Until within recent years there had been ascertained no trustworthy way of finding out the age of fish. It has been shown that mere size does not indicate the age. Rebbsch, Hencke and others have discovered that many of the bones, scales and otoliths of fishes have annual age rings, resembling those in tree trunks.

INDUSTRIAL AND MECHANICAL NOTES

The art of manufacturing nails by machinery was first practiced in 1790. The cotton industry of England employs many more women than men.

Artificial wood for matches, made from straw, has been invented by a Frenchman.

The Amsterdam diamond trade is in the hands of ten firms employing ten thousand workmen.

A species of stiff grass which grows abundantly in that country is used for match sticks in India.

The value of the Rand gold industry to South Africa is estimated at half a million dollars a day.

A room will look both larger and higher by the use of wall paper containing designs in vertical lines.

Rubber boots are now made with a leather inner heel which greatly increases the boot's period of usefulness.

In Austria, where the production of kerosene is a great industry, a large government refinery is under contemplation.

The manufacture of wood pulp paper involves 28 separate operations from cutting down the trees to sewing the product.

Nova Scotia claims to have the largest gypsum deposits in the world. They vary from a few feet to hundreds of feet in thickness.

May Be a Landslide.

Anderson 2,411. A change of 2,575 votes would have made C. C. Featherstone governor. He was defeated largely by the blind tigers of Charleston and the dispensary people of Aiken, Georgetown and Richland.

As a simple matter of arithmetic, therefore, it would appear that Judge Jones has a chance to be elected by a nice snug majority. Mr. Featherstone was without personal magnetism, he had no organization. He was defeated because he didn't know how to run. He wouldn't even promise pardons to some people in order to get their support. We don't believe that Judge Jones will do that either, but he has magnetism, he has an organization and he knows the game and will fight a winning fight. Traveling men who go all over the State estimate his majority at 20,000.

It will be a landslide one way or the other. If the people find that Judge Jones is the man they want, they will give him the biggest vote a man ever received. If they learn that he is no improvement on the present conditions their resentment against him for coming out and keeping others out of the race will be so strong that a ground swell will set in against him.

But, considering the race from a merely mathematical point of view, Mr. Featherstone received 51,050 votes, his opponent 56,200—in the second primary. Mr. Featherstone was an avowed prohibitionist and in Charleston threw the red flag in the faces of the people there. The vote in Charleston was Featherstone 820, opposition 3,565, majority against Featherstone, 2,745. As we said before a change of 2,575 votes would have elected Featherstone. Georgetown, another dispensary county, gave the present governor a majority of about 500 out of less than 1,500 votes. This vote will be divided—even if Judge Jones fails to get a majority.

In Richland there was nobody to fight Mr. Featherstone's battles and he lost by a majority of 1,207. If Judge Jones does not carry Richland, he will not lose it by that heavy a majority. We have heard one man who took 65 votes to the polls declare that he could not vote for Mr. Featherstone's prohibition platform and he threw his votes to the other man—and lost a little political job he had after all.

In Aiken Judge Jones will run far ahead of Mr. Featherstone who was beaten nearly 2 to 1, his opponent receiving a majority of 1,071 and Mr. Featherstone's total vote was but 1,076. The present governor's attitude on the new county fight has got him a number of relentless enemies who are politically powerful. The governor's acts with reference to this new county may have been correct, probably were, but he will be fought just the same.

In these counties, Charleston, Georgetown, Aiken and Richland, the present governor's combined majority was 5,269, while his total majority in the State was but 5,150. If Judge Jones can hold Mr. Featherstone's light vote throughout the State and can divide these 5,000 votes, he will be running about even. Some of the other counties which gave majorities to the present governor are: Abbeville 27, Anderson 678, Barnwell 340, Bamberg 38, Beaufort 53, Berkeley 42, Clarendon 151, Calhoun 46, Colleton 96, Dorchester 343 (out of a total of 1,200), Hampton 95, Horry 440, Kershaw 216, Laurens 280, Lee 170, Lexington 625, Newberry 628, Pickens 640, Saluda 650, Union 485.

We cannot but believe that Judge Jones will run far ahead of Mr. Featherstone in Newberry, Saluda and Lexington, for Judge Jones has many relatives in those three counties and Judge Thurmond, his campaign manager is also strong there. In Union the governor is reported to have endorsed for sheriff one candidate, who is generously opposed, and the numerous others are naturally antagonistic. The 640 votes in Pickens and the 678 in Anderson were due to local conditions. We will venture no predictions as to these counties. The people of Anderson will speak for themselves.

It will save you thinking by deciding at once that we must have a Chamber of Commerce organized along the proper lines. We are going to have it, so fall into line and make the thing unanimous.—Darlington Press.

Mayor Grace here's our hand commending you on the action of banishing the slot machines from your city, and too, for prohibiting the sale of whiskey after midnight or on Sundays. May you be successful in your fixed purpose.—Calhoun Advance.