Paper Bottles.

One of the most interesting of the many uses to which paper has been put is the manufacture of paper bottles.

We have long had paper boxes, barrels, and car wheels, and more recently paper pails, wash basins, and other vessels; but now comes a further evolution of paper in the shape of paper bottles, which are already quite extensively used for containing such substances as ink, bluing, shoe dressing, glue, etc., and they would seem to be equally well adapted for containing a large variety of articles.

They are made by rolling glued sheets of paper into long cylinders, which are then cut into suitable lengths, tops and bottoms are fitted in, the inside coated with a waterproof compound, and all this done by machinery almost as quickly as one can count.

They are cheaper and lighter than glass, unbreakable, and consequently very popular with consumers, while the fact that they require no packing material, and are clean, handy, and economical, commends them to manufacturers. Unlike glass, they can be manufactured and shipped at all seasons; and being made by machinery, the supply is independent of labor troubles, which are additional advantages to manufacturers who use bottles.

Suggestions of the Blizzard.

The recent blizzard with its accompanying high wind was somewhat alarming to dwellers in country frame houses. The speed of the wind is said to have been sixty miles an hour, and under such enormous pressure most houses quivered and shook. If such gales are in the future to come upon us in this locality, it is important that as far as possible our frame houses be so constructed as to stand up firmly against them.

A house is able to resist the pressure of the wind, mainly, because of its weight upon its foundation. Anything, therefore, that will add to its gravity or help to bind it to its foundation will so far increase its stability.

This may be done by "beam filling," not, as it is usually performed, merely with one row of bricks on the outside edge of the wall, to the top of the beams, but by building the *wall up solid* the full width thereof to the top of the beams. The first floor beams thus become firmly embedded and fastened to the foundation itself, and as it were a part of the same. Then, if to these the upright timbers are securely mortised and nailed, and all braced with scantling within the frame, and hemlock boards put on *diagonally* on the outside of the same, the whole framework will be so braced and substantial that it will effectually resist any gale likely to visit us in this section. More strength may still be added by continuing upward one course of brick, laid on the flat, between the studs, say six feet, or better still up to the second story. This last is the old fashioned way of building, when sheathing was omitted, and the outside covering only wide siding one inch thick and rabbeted. The bricks thus laid gave not only firmness to the houses, but also warmth in winter and coolness in summer. Until the time when our dwellings can be built of stone or brick (which at present are too costly), too much attention cannot be given to the construction of *frame* houses in the most substantial manner.

Butternut Wood for Indoor Work.

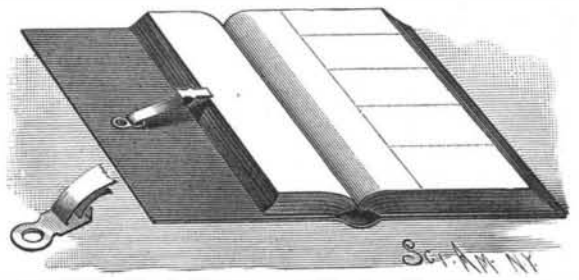
"Look here," said one of the best known lumber dealers to the editor of the *St. Louis Lumberman*. "Why don't you say a good word for butternut, which, of all the woods suitable for finishing purposes, is the most neglected right here in St. Louis? It has a splendid grain, is easily worked, and ought to increase in popularity. When my own house was built, I used cherry in the parlors and quartered oak in the dining room. Wishing to have a variety, I had the upper story rooms finished in butternut, and now many of my friends want to know why I didn't use it all over the house. Understand, I do not urge its use with the expectation of making a sale, for we haven't a foot of it in the yards. Our principal supply in this market comes from Wisconsin. It is growing scarce, and the only thing I have against butternut is that there is not enough of it."

Solid Petroleums.

According to the *Revue Scientifique*, Dr. Kaufmann has succeeded in solidifying petroleum by heating it for the space of half an hour with from one to three per cent of common soap, until the latter has quite dissolved in the petroleum, forming with it a homogeneous mass of the consistency of tallow. Cut up in cubes, this compound can be used as fuel for heating purposes. It does not ignite easily, but when once set on fire it burns steadily, slowly, and smokelessly, leaving a carbonaceous residue of about two per cent of its weight. Solid petroleum burns three times slower than coal, but yields a greater heat than the latter. American petroleum, according to Dr. Kaufmann's experiments, is more easily solidifiable than Russian. Previous experiments to solidify petroleum by boiling it up with common soap appear to have had no practical success.

IMPROVED STUB HOLDER FOR CHECK BOOKS, ETC.

A device to be applied to check and other books having sections designed to be torn out, whereby the stubs may be held down while the next page is being written upon, is illustrated herewith, and has been patented by Mr. Jasper M. Berry, Jr., of No. 225 St. Paul Street, Baltimore, Md. A hook or staple is either permanently or temporarily attached to the left hand cover, a band being attached to the hook or staple having on its outer end a clamp adapted to take hold of the stub.



BERRY'S STUB HOLDER FOR CHECK BOOKS, ETC.

The clamp may be of any desired form, and the band may be either rigid or flexible, different styles of clamp and band being provided for.

A Cheap Fireproof Stable.

A correspondent of the Hartford *Courant* relates what he saw in Frankfort, Germany. The loft of a stable had burned out, and he asked for the horses, thinking that they must all have perished, but he was assured that they were in the stable and all right, for no smoke nor heat could touch them.

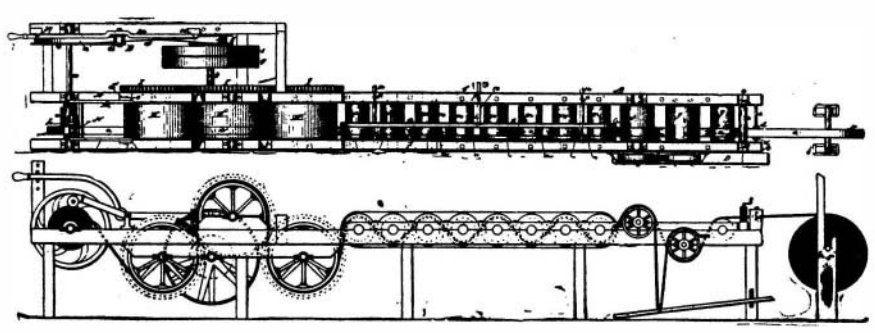
After everything was burned in the loft, he made an inspection, and found that the stable was practically fireproof. They had in its construction used old railroad ties, placing them three and a half to four feet apart, and then put arched corrugated iron between the ties, and filled in with a mixture of cinders and lime, making it deep enough to protect the ties.

The trap or door to reach the loft was made of sheet iron, filled in with the same compound. This kind of fireproofing is very cheap and, according to the writer, is very effective.

BELT STRETCHING AND TESTING MACHINE.

Most users of belting have experienced the trouble caused by a large amount of stretching in belts that takes place when the belts are new and first put into use. Various means have been resorted to in times past to remedy this trouble by special processes in the stretching of the leather before the leather was "made up" into belts, and by these means belts do not stretch at present as much as they did formerly.

It was not until very recently that methods were found by which belts, after being made, could be properly tested and a very large per cent of the stretch taken out, which, after all that has been done in the process of manufacture, still occurs after belts are put into use. We publish an illustration of a machine on which Geo. F. Page, president of the Page Belting Company, has recently secured a patent. This machine is to accomplish, after the belt is "made up" into rolls, the testing and the stretching which heretofore have been done after the belt has been sold and put in to use, for by this machine a belt is subjected to the same experience that it receives in actual use. In this machine a roll of belting is shown in process of testing and stretching.



BELT STRETCHING AND TESTING MACHINE.

The great advantages afforded will be apparent to every user of belting. This machine is in use in the factory of the Page Belting Company, of Concord, N. H. In practice, the belt is run through the machine several times, first one end forward, then the other, so that it is as thoroughly tested and stretched as possible, and this work is done after the leather, having been cut into narrow pieces, has been thoroughly stretched twice in the manufacture before it is "made up" into belts.

Heinrich Anton de Bary.

On the 19th of January, Professor Heinrich Anton de Bary, the eminent botanist, of the University of Strassburg, died at the age of 57 years. De Bary was born in 1831 in Frankfurt-on-Main, his father being a physician of Belgian extraction. At the age of eighteen he went to Heidelberg to study medicine and from thence to Marburg; subsequently he went to Berlin, where he came under the influence of Alexander Braun, the botanist. After taking his degree, he became professor of botany successively at Freiburg, Halle, and Strassburg, holding the latter office from 1872 until his death. De Bary's first published work was on the morphology and biology of some forms of fungi, and although one of his most important works dealt with the comparative anatomy of the phanerogams and ferns, the greater portion of his labors may be said to have been devoted to the cryptogams. Upon the life history of these he let in a flood of light, and contributed greatly to promote the advance in biological studies that has been so marked a feature in connection with the science of botany in recent years. The cause of death appears to have been a cancerous affection of the mouth, which first became manifest during his attendance at the last meeting of the British Association in Manchester. Professor De Bary was a few months since elected an honorary member of the Pharmaceutical Society of Great Britain.

Magnesium.

The following experiments were made for the aluminum and magnesium manufactory in Bremen, at the mechanical experimental station in Charlottenburg. Tensile strength, limit of breaking, 23·2 kilos. per 1 qmm., specific resistance to compression 27·2 kilos. per 1 qmm., bending strength 17·4 kilos.

In comparison with other metals, the strength of magnesium is relatively very considerable. The breaking coefficient for tensile strain per square millimeter is:

		Specific Gravity.
Magnesium	23·2 kilos.	1·75
Aluminum	20·5 "	2·67
Brass	12·5 "	7·8-9·5
Bronze	23·0 "	8-9
Rod iron	38·0 "	7·6-7·8
Delta metal, poured in sand	34-36 "	8·6
Delta metal, rolled hard	53·0 "	—

Since the rolling of magnesium does not offer the slightest difficulty, even in such complicated forms as T I U, or as angles, round or four-cornered rods, plates or sheets of 0·1 mm. thickness, and as pure magnesium is sufficiently resistant to atmospheric influences and can be polished and easily cleaned, it lends itself on account of its lightness and relative strength to the construction of apparatus, etc., required to be made of metal and also to be light, as, for instance, nautical, physical, and astronomical instruments. The working of magnesium requires heat. At a temperature of 450° C., it can be rolled, pressed, worked, and brought into complicated forms. Screws and threads can be made of magnesium, and these are considerably sharper and more exact than those from aluminum. Owing to its cheapness, magnesium can also be used in the manufacture of a variety of useful articles. Experiments in this direction are now being made.—*Jour. Soc. Chem. Industry.*

Waterproofing Process for Woolen Goods.

The following method is in use in Germany for waterproofing woolen goods: A solution is made of 100 parts of alum, 100 parts of glue, 5 parts of tannin, and 2 parts of soluble glass by dissolving alum in a moderate quantity of boiling water. The glue is steeped in cold water until it has absorbed twice its weight of water, and is then dissolved by heat. The tannin and soluble glass are well stirred into the solution of glue, to which the alum solution is then added, and the whole is stirred and allowed to cool. One kilo. of the gelatinous mass is boiled for three hours in 10 to 15 liters of water, fresh water being continually added to compensate for evaporation. The bath is then allowed to cool to 80 degrees Centigrade, and the material to be rendered waterproof is kept in it for half an hour, then withdrawn, and the moisture is allowed to drip from it for several hours. Finally the cloth is stretched on a frame and allowed to dry at a temperature of 50 degrees, then calendered. The cloth gains considerably in weight, and is perfectly waterproof, though it impedes neither air nor perspiration.

SOME one says that a remarkable imitation of black walnut may be manufactured from poor pine, the quality and appearance of the article being such as to defy detection, except upon very close examination. To accomplish this, one part of walnut peel extract is mixed with six parts of water, and with this solution the wood is coated. When the material is half dry, a solution of bichromate of potash, with water, is rubbed on it, and the made walnut is ready for use.