

ULLMAN'S HYGROMETER.

The quantity of aqueous vapor in the atmosphere is constantly varying; evaporation from seas and lakes, and the combustion of inflammable substances are constantly adding to it, while the deposits of rain, snow, hail, and dew in some portions of the earth are perpetually removing it. In meteorological observations, it is very important to ascertain the proportion of aqueous vapor in the atmosphere at stated and frequent periods, and much ingenuity has been expended in the invention of convenient instruments for this purpose. For the use of scientific institutions Mason's hygrometer has nearly or quite superseded all others; when carefully protected and kept in order it operates admirably, but it is expensive, does not bear low temperature, and is open to other objections. The hygrometer which we here illustrate may probably be made as simple as any of which it is possible to conceive. There are certain plants such as the *chahajin* or *chahan* of Arabia, and the *geranium erodium* of this country and Europe, which have attached to the capsules of their seeds, long tail-like appendages of a spiral form, which tend to twist and untwist as the air in which they are placed contains more or less moisture; and the hygrometer represented in the annexed cuts consists simply of one of these vegetable spirals, placed in a suitable box, and furnished with a light in dex and a dial plate, to indicate its degree of torsion as that varies with the dampness of the air.

A B (Fig. 1) is the box with the dial plate and index, *f*. In Fig. 2, *d*, is the spiral tail-like appendage of the capsule of the Arabian *chahan*, fastened by a bit of cement to the bottom, *a*, of the box, and supporting the light index, *f*, at its upper end above the dial plate, *b*. *J, j*, are holes for the admission of air to the box, and *h*, is a glass for protecting the index. A small collet, *g*, preserves the point of the capsule from displacement. Dry air causes the vegetable spiral here described to twist, while moisture diminishes the torsion. It forms an exceedingly cheap and simple hygrometer; and Professors Henry of the Smithsonian Institute, Draper of the New York University Medical College, and J. Lawrence Smith, have born testimony to its sensitiveness and reliability.

The patent for this invention was issued, through the Scientific American Patent Agency, Sept. 13, 1859, and any further information in relation to it may be obtained by addressing the inventor, Louis S. Ullman, at Columbia, Tenn.

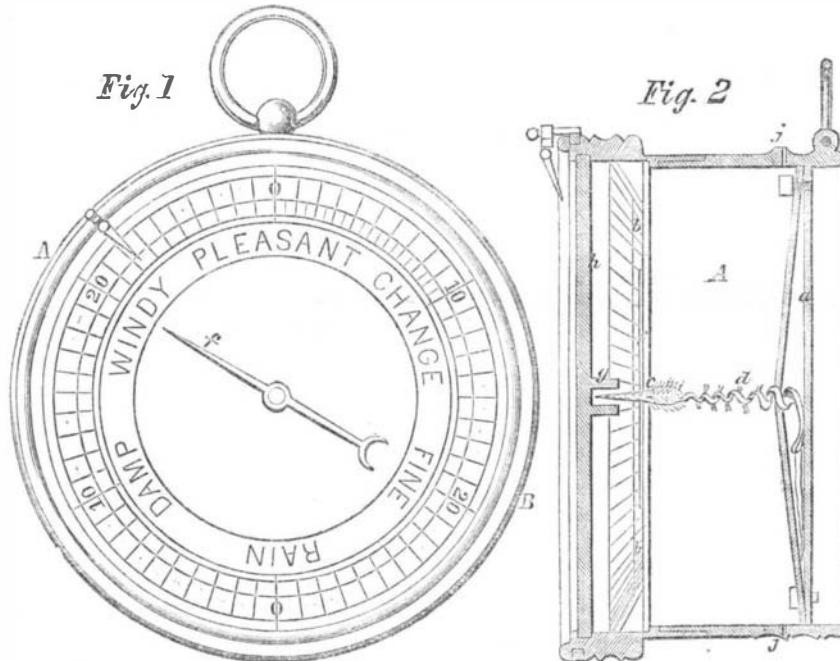
IMPROVED CATCH BOLT.

The object of the invention here illustrated, is to diminish the friction, wear and noise caused in shutting doors furnished with spring bolt locks or latches. To the bolt, D, the lever, C, is pivoted at *a*, so that when the lever, C, is forced back, it carries the bolt with it. The front convex end of the lever, C, extends a little beyond the end of the bolt, so that it, instead of the bolt, may strike the nosing in closing the door. As the door is closed and the convex end, *d*, of the lever is pressed against the nosing, the projection on the back of the level is forced through the slot, *f*, in the lock, and the curved edge, *c*, of this projection is pressed against the edge, *e*, of the slot, thus forcing back the lever, C, and with it the bolt, D. It will be seen that this pressure of a concave surface, accompanied by the laterally yielding motion of the lever, is attended with much less jar and friction than results from the ordinary bolt striking the nosing, when the bolt is firmly held from

any yielding side motion. The parts are intended to be cast so as to be put together without any drilling or riveting whatever.

The patent for this invention was obtained through the Scientific American Patent Agency, Nov. 29, 1859, and persons desiring further information in relation to it will please address the inventor, William Salisbury, at Wheeling, Va.

ULLMAN'S IMPROVED HYGROMETER.



PHILADELPHIA-BUILT WAR STEAMERS.

The Philadelphia people claim to be the best builders of war steamers in the country. The Philadelphia *Ledger*, of the 29th ult., says:—"It is a matter which we can refer to without laying ourselves open to the imputation of boasting, that the Philadelphia Navy Yard builds the best and most efficient vessels of war of any naval station in the country. The *Wabash* is a splendid

trial trip on the 28th ult., and it was telegraphed to this city that her performances were very unsatisfactory. It is said that she was thoroughly tested, and competent officers were on board. Her machinery was defective, and the greatest speed attained was $7\frac{3}{4}$ knots an hour.

DURABILITY OF AMERICAN SHIPS.

In connection with this subject, we have received a pamphlet from Mr. Donald McKay, the eminent shipbuilder in Boston, who has just returned from Europe, and who, while in England, has been endeavoring to remove the prejudices of the ruling merchants in that country regarding the durability and strength of American-built timber vessels. The ruling merchants, who exercise great influence in regard to the character of ships in England, are those who form Lloyds' Committee. These have entertained the notion that ships built of American timber—such as live-oak, white oak and pitch pine—are inferior in durability, efficiency and safety to those built of English oak. Mr. McKay's pamphlet, which is extracted from the manuscript of a work on naval architecture he is about to publish, contains statistics relating to the durability of American vessels, which prove conclusively that they are at least equal in durability to English vessels, and it is well known they are superior in many respects—speed being an important one. Of the age of our war

vessels 9 line-of-battle ships average 38½ years; 5 frigates have been in service for 26 years; 19 sloops 22; 4 brigs 20; 9 steamers 14½ years. Live oak is used exclusively for the frames of our war ships, and it is considered by all naval men to be almost imperishable. The tensile strength of American white oak is 11,501 lbs. per square inch; that of English oak 10,224 lbs.; the transverse strength of the former oak is 1699 lbs. that of the latter 1629 lbs. The American oak is lighter than the British and yet it is stronger. Of 102 of our merchant ships their average age is 24 years; of 40 barks 25½; of 54 brigs 25 years; and of 12 steamers 18½ years.

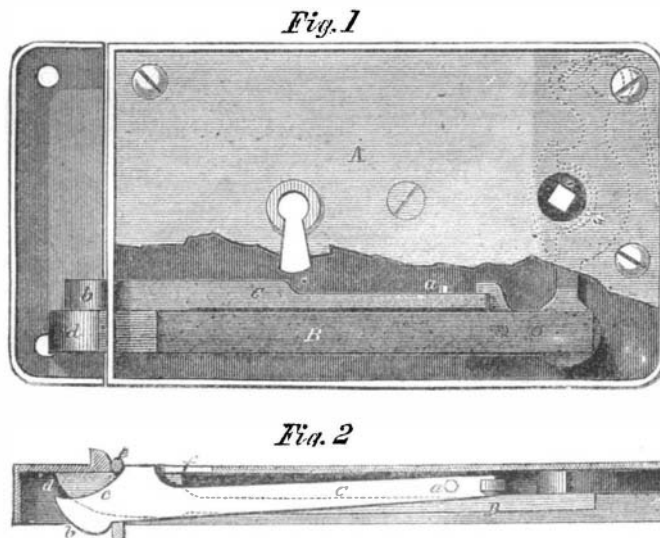
The term assigned as to the average duration of British war ships is 15 years, after which they require complete and extensive repairs. Mr. McKay considers that the navy of England cannot present such satisfactory results of durability as the American one, and he undoubtedly is correct.

A very general opinion prevails that American-built ships are not so strong as the British. This is very erroneous and should be corrected. Our ships are in general very much stronger than the English timber ships of the same class, and British merchants concede this. Some of the best ships, now in the British

mercantile navy, were built in the United States. The colonies of New Brunswick and Nova Scotia, also built some splendid ships for English and Scotch merchants.

About one-third of the roof of the Union Railroad depot fell at Troy, N. Y., on the morning of the 30th ult. The cause of the accident was the contraction of the iron chords of the arch by the intense cold. This depot is the largest in our country, we believe.

The suspension bridge over the Dordogne, at Cubzac near Bordeaux, has five spans of 400 feet each, 125 feet above high water. There are also 2,000 feet of stone arcades and embankments on each side, making the entire length of the structure 6,000 feet.



SALISBURY'S IMPROVED CATCH BOLT.

success, while the *Niagara*, built at New York, under George Steer's direction, is a miserable failure. The *Minnesota*, built at one of the southern ports, has the dry rot already. The *Lancaster*, another of our steamers, has just shown herself to be a fast sailer. The *German-town*, built here, beats all the sloops-of-war of the same class in the navy. The *Paunee* is another fine steamer, built here, which will soon add to the fame of her constructor. The *Iroquois*, built at New York, has just made her trial trip, and, with only a portion of her armament, is described as a wet boat, and strongly inclined to roll, and it is a question whether or not her armament is too heavy, and calculated to weaken her amidships, and make her top-heavy with too much metal." As confirmatory news in this opinion, the steam sloop-of-war *Narragansett*, built at Norfolk, returned from a second