

Science and Art.

Correcting the Mariner's Compass.

It is a well known fact that the local or induced polar attraction in iron vessels has been the cause of vitiating the terrestrial magnetic action of the compass, and thereby has led to the loss of a number of ships, on account of steering in the wrong course. To overcome local attraction on board of iron ships has long occupied the attention of eminent scientific men in all parts of the scientific world; and there has been a standing committee in the city of Liverpool, appointed by the British Scientific Association, called the "Compass Committee," whose object has been to collect information on the subject, and to discover a remedy for the evil, if possible. Hitherto, their efforts have been unsuccessful to discover an effectual and universal remedy. Various remedial plans have been tried and are now in use, but all, it is stated, are more or less defective. We perceive by a paragraph in the Boston *Atlas*, that Capt. Morris, of the iron steamer R. B. Forbes, has discovered a true universal remedy, that may be relied upon under all circumstances for correcting the compass. A description of the discovery is not given; the statement, therefore, must be received with caution. If true, the invention is one of great moment to the nautical interests of every nation, as iron ships are becoming more numerous every year. It is stated that Capt. Morris has used the plan himself, with perfect success, for six years, and that his compasses have not varied one-eighth of a point during all that time.

Improvement in Cotton Gins.

The accompanying figures represent the improvement in Cotton Gins for which a patent was granted to H. H. Fultz, of Lexington, Holmes Co., Mississippi, on the 9th of last month (October).

The nature of the improvement consists in giving the cotton to be ginned a spiral motion in the feed box, over the saws, so that it (the cotton) is made to pass from one end of the feed box to the other, to present a fresh surface of it to the action of the saws as it passes along; also to prevent the staples from being cut by the saws; while at the same time the cotton is cleaned in a superior manner.

Fig. 1 is a front view of the improved gin, with the seed board removed, and fig. 2 is a transverse vertical section of it. The same letters refer to like parts.

A represents the shaft on which the saws, B, are secured. The saws rotate between the ribs, a, of the breast, C. D is the seed board, secured between side pieces, a' a', of the frame, E, to which the breast, C, is attached (these parts are of the usual construction.) The frame, E, of the breast is secured by hinges, b b, to the frame, F, of the gin, so that the breast may be raised or lowered, to allow the saws to project the requisite distance between the ribs, a a. To the upper part of the frame, and between the ribs, a, of the breast, the lower ends of oblique plates, c, are fitted. These are of a curved form, as represented in fig. 2; their back edges are made to correspond in form to the upper curved cross piece of the frame.—The upper ends of these oblique plates, c, are fitted in a bar, G, the ends of which are of a cylindrical form, and pass through the side pieces, a' a'. This bar, G, has a regulating screw, d d, on each end, by which any degree of obliquity can be given to the plates, c.

The feed box is formed by the seed board, D, side pieces, a' a', and breast, C. The cotton to be ginned is placed in at one end of this box—at H, fig. 1. By the action of the saws, B, the cotton is turned within the feed box and the oblique plates, c, move it from the end, H, towards the opposite end, as indicated by the arrows. By this means, a fresh surface of cotton is presented to the action of the saws, as it is moved spirally along the whole length of the feed box, and the cleaning and separating of it must be accomplished in a superior manner to that of the common gin.

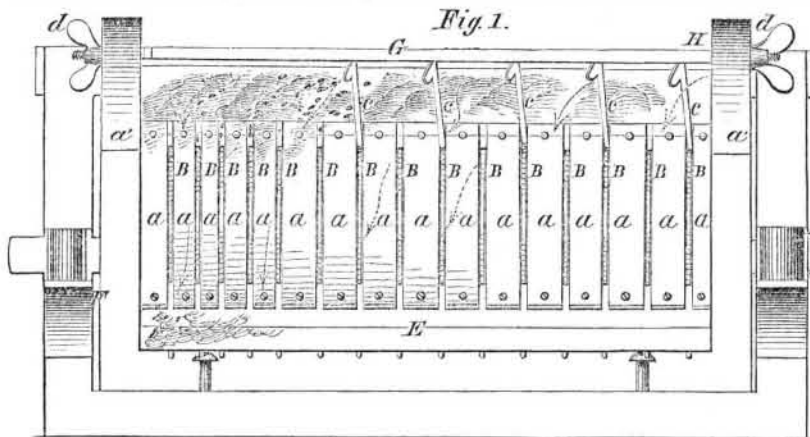
It will be observed, that by giving the cotton a spiral feed motion to the saw, the staple will not be cut by them, as in common gins, by long direct action upon one part. The long

staple is therefore separated near the feed end, H, and is subjected to the action of the saws for only a short period; the medium staple is taken out about the middle of the gin, and the short staple at the extreme end opposite H.—At this end of the box the saws are placed closer together, and the seed is stripped off the short fiber, as shown in fig. 1. The seed and hulls also pass out underneath the seed board

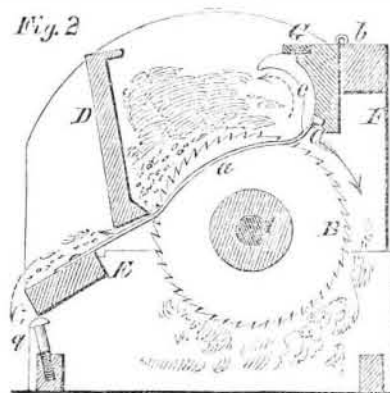
at the end of the box, a suitable opening being made in it for this purpose.

In the common cotton gin, the staple is liable to be cut by the saws, because the cotton as placed in the feed box, merely rotates by the action of the saws, consequently, in order to separate the seeds perfectly, it is subjected for a long time to the direct action of the saws, which thereby cuts the longer staples, dis-

FULTZ'S PATENT COTTON GIN.



charging all of about an equal length. In this machine the cotton is separated into three



qualities—long, medium, and short staple and each quality receives an action commensurate

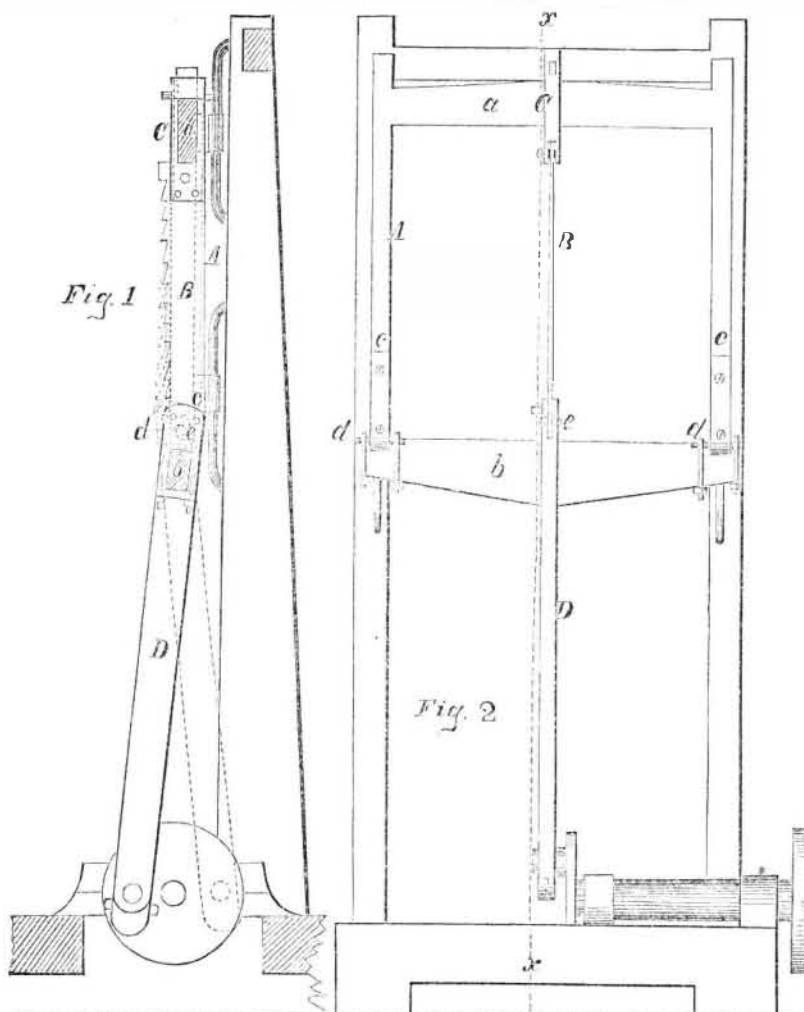
to clean it—the longer staples are not acted upon more than may be required, while the shorter staple is acted upon as long as is necessary.

By experiments made with this gin, three important results, as we have been informed, have been obtained. "First, an increased quantity of cotton ginned by it; second, an improvement in the quality of the cotton over that ginned by the old method—its value being increased from one to two cents per pound, as decided by the cotton brokers of New Orleans; thirdly, all the hulls are discharged with the seed, without being cut with the saws."

Every improvement in cotton gins is of great consequence to our country, and this one appears to be valuable and important.

More information respecting it may be obtained by letter addressed to Mr. Fultz, at Lexington, Miss.

HANGING RECIPROCATING SAWS.



The annexed engravings, represent the improved mode of hanging Reciprocating Saws, for which a patent was granted to O. S. Woodcock, of Connorsville, Ind., on the 11th of Sept. last. The nature of the improvement consists in attaching the lower end of the saw

directly to the upper end of the pitman—the tug-pin of the saw forming a joint, and the pitman working on a suitable fulcrum below the tug pin. Fig. 1 is a transverse section taken at x x, fig. 2, which is a front view of a saw sash and pitman, showing the improvement. Similar letters on the figures refer to like parts.

A represents the saw sash, and B the saw, the upper end of which is attached by a stirrup, C, to the upper rail, a, of the sash, in the usual manner. The lower rail, b, of the sash is connected permanently to the pitman, D, a short distance below its upper end, and the ends of the rail, b, are connected to the lower ends of the stiles, c c, of the sash, by joints, d d. The lower part of the saw, B, is attached by a pin, e, to the upper end of the pitman, and as the pitman extends a short distance above the rail, the pin, e, will be a short distance above the joints, d d, which connect the lower rail, b, of the sash with the stiles, c c, consequently as the sash, A, is moved up and down by the pitman, the saw will be thrown in and out from its work. When the sash descends, the pitman will throw the lower end of the saw towards the log, and when the sash ascends the lower end of the saw will be thrown from the log, because the joints, d d, serve as fulcra for the pitman, and the saw is attached to the pitman above the joints, d d.

By this improvement, the sawdust has ample room for escape during the upward movement of the saw, and the saw is prevented from being choked or clogged, and will run lighter and freer, and will bear more feed, and consequently work more rapidly than saws hung in the usual way.

This saw has a dipping motion given to it like that by hand saws; this is accomplished in an exceedingly ingenious and simple manner by the mode in which the joint of the connecting rod and the hinged fulcra saw sash are arranged, as will be readily understood by examining the figures attentively.

This improvement may be applied to saws which are not hung in sashes, and technically termed "mulley" or "moilly" saws, equally as well as to those which are placed in sashes. All that is required is to have a fulcrum for the pitman equivalent to the joints, d.

More information may be obtained by letter, addressed to H. B. & O. S. Woodcock, Connorsville, Ind.



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