

## New Inventions.

## Improved Stave Jointer.

The barrel is an invention peculiar to the most advanced condition of society. The Chinese, whose skill in making all kinds of impossible shapes in wood and ivory is proverbial, can cut balls within balls *ad infinitum*, but, if we are correctly informed, they cannot make a barrel nor even a small keg. There are few articles in common use so cheap, so convenient, and so indispensable as the various forms of cask. There is no other material so strong and so elastic, and so suitable for containing all the varieties of liquids, as wood, and no form in which it can be so conveniently moved and so readily hooked on to and released in hoisting, as that under consideration. Further, there is no form in which the structure can be so readily tightened as the material contracts, and certainly none approximating to it in economy of material. All credit, therefore, to the man, long since forgotten, who first invented the combination of staves, hoops and heads known as a barrel.

The invention represented in the accompanying engravings is one of the many which have been produced for the jointing of staves. The staves may be split out or be cut in any of the rapid methods now in common use, and are cross piled, so as to be seasoned in a perfectly flat or plane condition. The jointer here represented gives them exactly the proper swell, or increase of breadth at the bilge or middle, whatever may be the varying width of the staves, and provides what the inventor considers practically the best bevel for the edges.

It is well understood that a line drawn from the center to the circumference of a circle will form the true bevel for a segment of that circle, and it is with special reference to this principle that most of the jointing machines in use are constructed, making the bilge and bevel mutually dependent upon each other, and proportioning each to the other with mathematical accuracy. But in making barrels by hand in the usual way, a very considerable allowance is always made by the cooper in the bevel of the stave for the "pressure of the truss hoops." Too much bevel or "inset" is a serious defect, and the allowance necessary to be made varies with the thickness of the wood; the thinner the stave, the greater the allowance generally necessary.

The jointing machine represented in the engravings is the invention of B. McKeage, of Accatink, Fairfax county, Va., who has been engaged for the last five years in manufacturing flour barrels from cut staves. Staves are usually cut to a circle somewhat larger than that of the barrel for which they are intended, say one-third larger; a bevel corresponding to that enlarged circle, would therefore cause the inner edges of each joint to be joined the most tightly when the parts of the barrel are all together. Mr. McK. considers this effect an advantage, and in the construction of this jointer (to employ his own graphic language) provides for giving each stave "an uniform bevel, and that no bevel at all." Supposing staves to be originally cut in a given curve, afterwards flattened out and finally again curved as they are put together by the hoops, it will be seen a square joint given the staves when flat is, in fact, about equivalent to giving them a bevel corresponding with their original curve. The effect of the practice of Mr. McK. is based on this principle, so that when the staves are set up in the barrel, and the truss hoops applied, the pressure comes in the first instance against the inner edges of the staves, forcing them to arch out to the hoops, making a round and substantial band, instead (as is the case when there is too much bevel) of bringing the pressure on the outer edges of the staves, and causing them to spring inwards in the middle.

In this machine the edges are jointed by rapidly revolving cutters. The axes on which the cutters are carried are mounted in frames, which are separated and drawn together automatically to exactly the proper

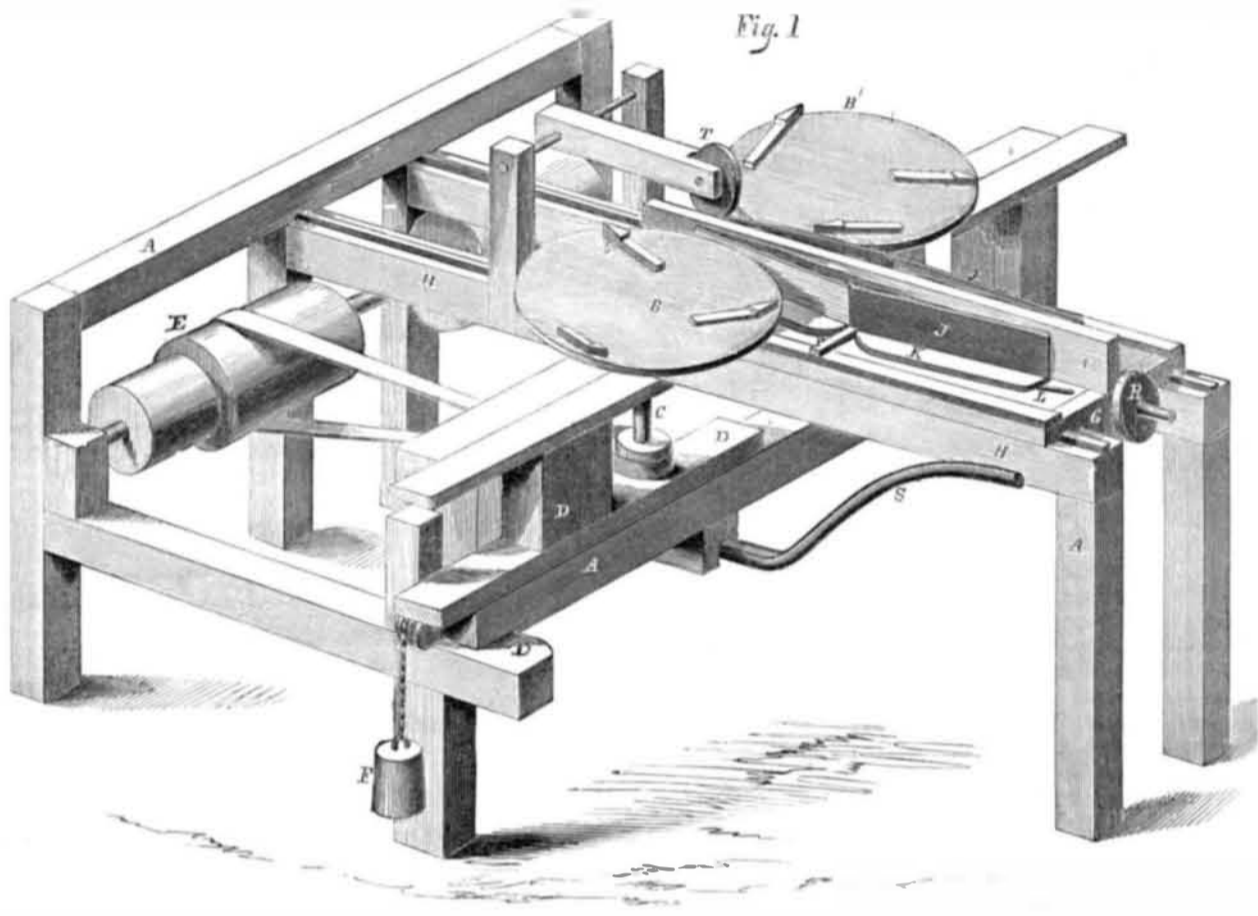
extent as each stave is fed through. This movement is effected by the aid of a pattern consisting of parts enclosed between two elastic plates of steel, so that by a simple movement the parts are separated and the pattern spread into the form of a wide stave, or contracted into that of a narrow one, and

the swell duly increased or diminished to the proper extent with each change.

Fig. 1 is a perspective view of the machine complete, except that the cutter disks are, for perspicuity, represented each with three instead of six cutters. Fig. 2 is a plan view of the pattern and attachments, which lie direct-

ly beneath the stave to be shaped; and Fig. 3 a view of the same parts, seen from below. A is the frame of the machine, B and B' are horizontal cutter disks, mounted on the spindles or upright shafts, C C', which are carried in the frames, D D'; and b are cutters, which are secured on the face of the cutter disks. E

## McKEAGE'S STAVE JOINTER.



is a driving pulley, from which motion is conveyed by belts to the two cutter disks. F is a weight, which, by a cord stretching across under the frame, D, connects to the opposite frame, D', while a corresponding weight, not represented, on the further side of the machine, connects to frame, D,—the effect of the weights being to draw the frames, D

and D', and consequently the cutter disks, B and B', together. G represents a carriage to carry the stave, the pattern, etc.; H H are ways on which G travels, and I represents simply a narrow ridge along the top of G, to carry the stave. J J are shaping plates, which form the swelled sides of the pattern. K K are stout movable pieces, on which said shaping

shall have a greater or less degree of inclination than that represented. A given uniform amount of bevel can also be given to the joint if desired, by beveling the faces of the cutters, b.

For further particulars the inventor may be addressed as stated.

## Electric Signals for Railroads.

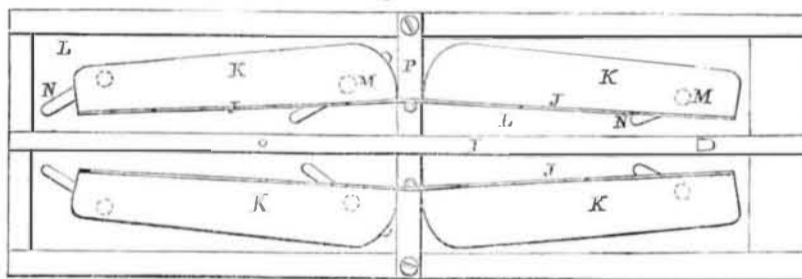
On page 356, this Vol., SCIENTIFIC AMERICAN, we presented a description, condensed from the *Washington Union*, of a system of lamps, to be shown along the line of a railroad some four or five miles in advance of a train, the movement of the shades being effected by the electric current. It was there credited to Mr. Solomons, of Savannah; but we have since received a letter from H. Seelhorst, of Philadelphia, in which he claims the invention for himself, and proves that he had a model on exhibition at the Franklin Institute Fair in November last. Mr. Seelhorst's device appears to have been the same as Mr. Solomon's, except that the latter has an extra wheel in his locomotive to set the key, while in the former model, each wheel of the train passes over the key.

## The Harvest Time.

The classical sickle is fast retreating to a place among the relics of antiquity, only to be visible in mythical representations of old Father Time, and in the constellations on the celestial globes. For practical gathering of grain, both it and the great improving thereon known as the cradle, are fast becoming obsolete in the great grain districts of this country. A correspondent of the *Chicago Tribune* went up on the top of a hill called Mount Zion, six miles from Janesville, Wis., and counted on the surrounding plain one hundred and fifty reaping machines, each of four-horse power, busily cutting down wheat. There were one thousand men, women and boys following after, binding and shocking up the golden sheaves. He enjoyed a sight worth seeing—grain falling and being gathered up at the rate of two hundred acres per hour.

The waterfalls which surround the valley of Zo Hamite, in California, are believed to be the loftiest in the world. One of them is estimated at two thousand feet high.

Fig. 2

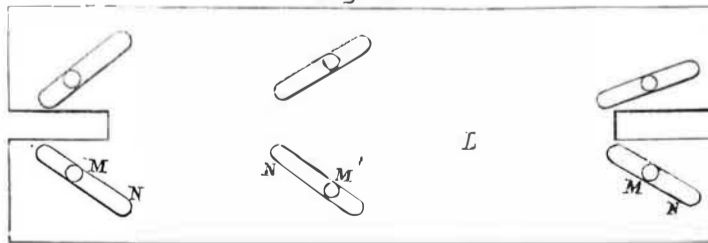


plates are supported, and L is a flat plate extending across the base of the whole carriage. M M represent pins projecting downward from K K, and N N represent slots in the flat plate, L, in which the pins, M, are received. P is a cross bar, to support J. R is a hand wheel or lever, by means of which the plate, L, is moved forward or back in the carriage. S is

a handle, by operating which a wheel is thrown into or out of gear, so as to move the carriage, G, with its attachments, and T is a wheel mounted in a frame, as represented, to aid in holding the stave firmly down in its place.

By examining Fig. 3 it will be observed that the slots near the center of L stand at a

Fig. 3



greater inclination than those near the ends. It follows from this that as the plate, L, is moved endwise in the carriage from right to left the shaping plates, J J, are separated, but not equally at all points, the central portions, or bilge, being spread most. This gives the broad staves more swell, and, in short, gives exactly the form desired to each stave. As the shaping plates have too much rigidity to allow of assuming an angular form, the curve is always gradual, and the hand wheel or cor-

responding device represented by R, allows of sliding the plate, L, very rapidly and easily, so as to adapt the machine instantly to the jointing of a stave of any ordinary width.

This invention was patented November 18, 1856, and has been in practical use for upwards of a year. The machine appears very durable and simple, and applicable to almost every variety of work, as it is easy to increase the swell of the barrel, by substituting at any time a new plate, L, in which the central slots