

Dec. 4, 1934.

O. MITCHELL

1,983,300

METHOD OF MAKING GIN RIBS

Filed Nov. 23, 1931

2 Sheets-Sheet 1

Fig. 1.

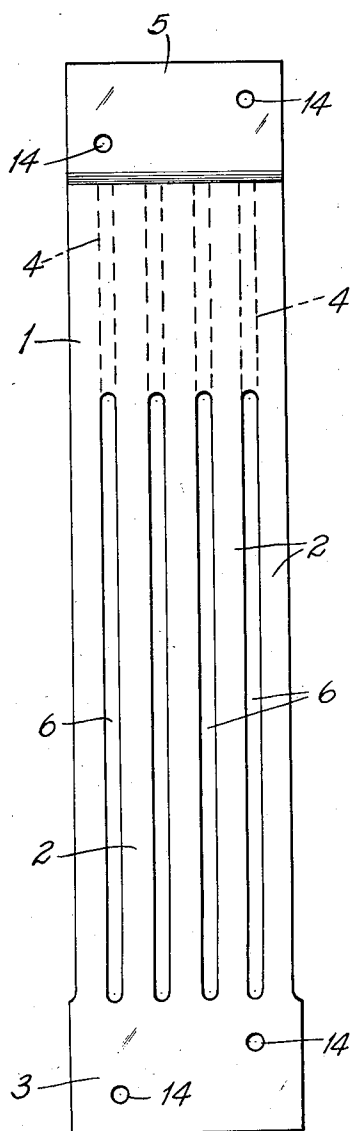
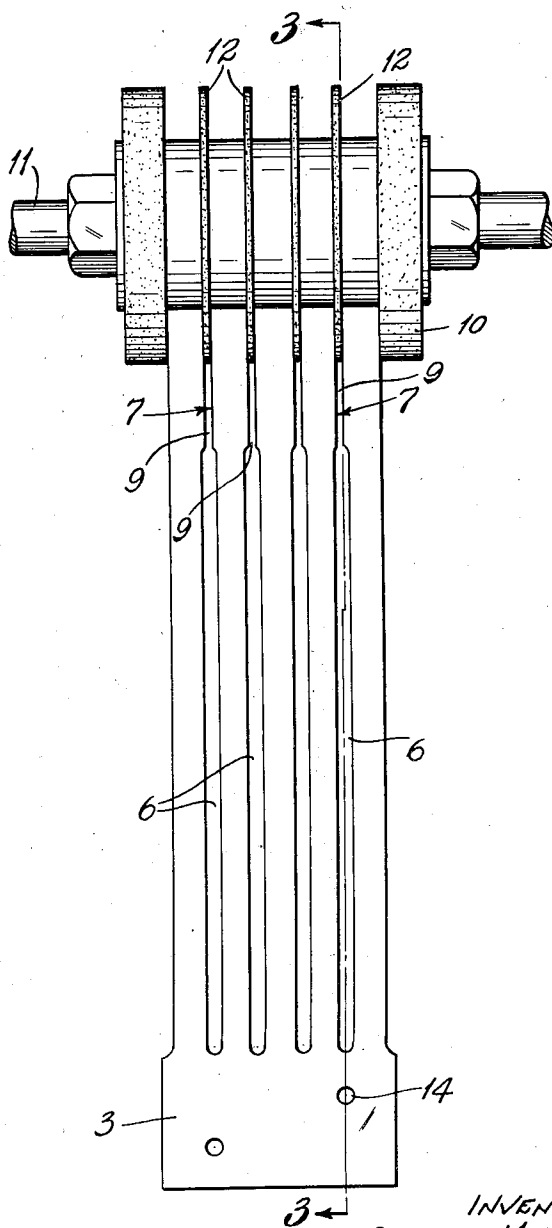


Fig. 2.



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Fig. 3.

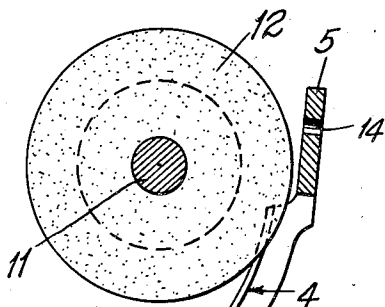


Fig. 4.

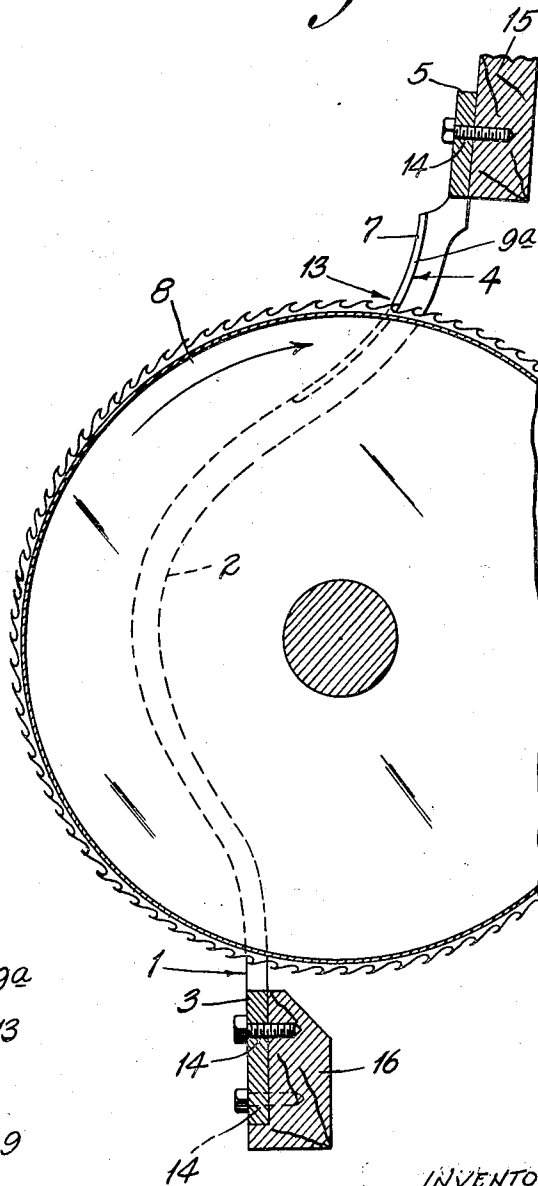
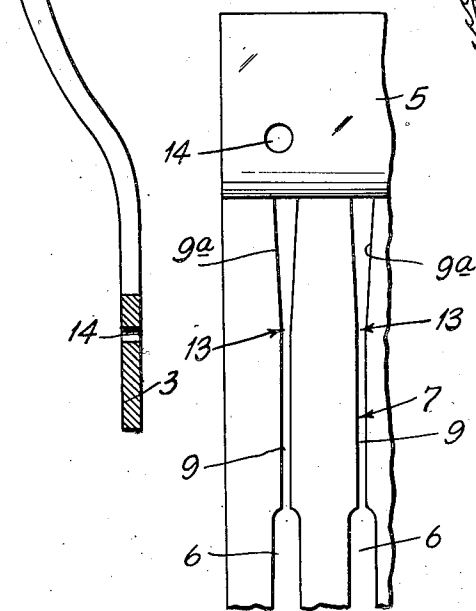


Fig. 5.



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UNITED STATES PATENT OFFICE

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METHOD OF MAKING GIN RIBS

Orville Mitchell, Dallas, Tex.

Application November 23, 1931, Serial No. 576,776

5 Claims. (Cl. 29—163.5)

The general object of this invention is to provide a novel method of producing gin ribs in which a group of parallel ribs are cast integral with supports at their upper and lower extremities and provided with interposed saw spaces of exact and uniform width and equi-distant from each other.

Prior to my invention, attempts have been made to form gin ribs from pressed steel in groups. Such ribs, however, have never been found practicable and, so far as my knowledge extends, are not used, the main reason accounting for their non-use being that the space between the gin saws is so restricted that it has been found impossible to provide sufficient strength or rigidity in a rib formed from sheet metal. Another difficulty has been that ribs at the ginning point, that is, that part of the space between the ribs through which the cotton is carried by the saws, must be very hard to withstand the action of the sand carried through with the cotton, and only chilled iron has thus far met this requirement.

Up to the present time, therefore, the ribs for gins have been made and mounted separately. To expedite foundry work, in some instances the ribs have been cast in groups with thin weak points of metal between the ribs, and afterwards broken apart at the weak points and ground on each side, so as to form fairly accurate or uniform spaces at the ginning points of the ribs when the latter were secured in position in the gin.

The major portion of the ordinary gin rib, below the ginning point of the rib, is made narrow enough so that when the ribs are secured in place in parallel relation they will provide comparatively wide spaces for the lower portion of the gin saws to work through, and this portion of the rib does not necessarily have to be uniform or of any definite width. The upper portion of each rib, however, is provided with a ginning surface exposed to the roll box. This surface is somewhat wider than the lower portion of the rib, and is ordinarily produced by a relatively thin flange which projects from each side of the ginning portion of the rib. It is these thin flanges or extensions, that are ground off on each side of the ordinary rib to form the spaces at the ginning point through which the saws revolve, as explained above.

In order to have the gin saws carry the cotton through the spaces between the ribs at the ginning point as freely as possible and with the minimum cutting action on the lint, it is important to have the ginning spaces in which the saws run as wide as practicable, but at the same time

it is just as important to prevent seeds, and particles of seed, being carried by the gin saws through the spaces with the lint. To this end, it is essential to have the working spaces for the saws very uniform, and this is not possible in the use of individual ribs independently secured to the gin rails. This is due to the fact that the work is done by hand, the ribs being generally screwed at opposite ends to supporting rails, and if a rib is placed slightly out of position or alignment, it will cause the space between it and the next rib to be too narrow on one side and correspondingly too wide on the opposite side.

All of these difficulties are overcome by my invention, which secures the provision of saw spaces between the ribs of absolutely uniform width and equally accurate spacing of the ribs from each other.

The invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a front view of a cast group of ribs before having the saw spaces machined therein;

Figure 2 is also a front view of the casting, but showing a grinding implement applied thereto in the process of simultaneously forming saw spaces between the upper portions of the ribs;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a cross sectional view taken through a set of gin ribs secured in position and showing the relation thereto to the gin saws; and

Figure 5 is a face view on an enlarged scale of a portion of a complete group of ribs, showing the saw spaces above the ginning points tapered outwardly and upwardly.

Referring now to the drawings, the numeral 1 indicates a casting providing a group of ribs, 2, cast integral at their lower ends. The ribs 2 are of the conventional curved shape shown by Figure 3, and in the upper portion of the casting these ribs are united by relatively thin, interposed webs 4, and are cast integral with a support, 5. The ribs 2 of the casting are sufficiently narrow to provide between them relatively wide spaces 6, through which the lower portion of the gin saws project, as shown by Figure 4. In its upper portion, each rib is provided with a ginning surface exposed to the roll box which is somewhat wider than the lower portion of the gin rib, and this extended surface is usually formed by relatively thin flanges, 7, projecting laterally from either side of the rib in its upper portion, the inner surface of said webs being flush with the inner surface of the body of said ribs. By inner surface, I refer to the surface exposed to the roll

box. The opposed edges of these flanges define the size of working spaces, 9, for the saws of the gin, which spaces are much narrower than the spaces 6. In practice, they are wide enough to permit the gin saws 8 to pass freely through them, and narrow enough to prevent seeds or particles of seed being carried by the gin saws through these spaces with the lint. It is of the utmost importance that these spaces, 9, should be positioned equi-distant from each other and that the spacing should exactly correspond to the spacing of the saws 8 of the gin. It is also necessary that the spaces 9 should be of uniform width at the points where the saws pass through them, as otherwise lack of uniformity in these respects will result in some spaces being so narrow as to cause cutting of the lint, while other spaces will be wide enough to permit particles of seed and other foreign matter being carried through by the saws with the lint. This, as I have heretofore explained, is a disadvantage incident to all gins as now constructed.

According to my invention, I provide the working spaces 9 for the saws, between the ginning surfaces of the ribs, by simultaneously cutting or grinding out the central portion of the webs 4 by an implement adapted to provide absolute uniformity in the width of the spaces and in the distance between them.

Preferably the instrument I employ for this purpose consists of a circular gang grinder 10, mounted on, and adapted to be rotated by, a shaft 11, and having a series of grinding wheels 12, which are spaced apart exactly the same distance that separates the gin saws, and are exactly the thickness desired for grinding out the spaces 9 in which the gin saws must run. By applying these grinding wheels to the webs 4 and cutting through them in the manner illustrated in Figure 3, I not only provide uniform spaces of proper width, but these spaces are formed at the exact distance apart necessary to properly fit the gin saws. A portion of the webs 4 are left to project from either side of each of the ribs 2 to form the flanges 7, providing the extended ginning surface above referred to.

By referring to Figure 4, it will be seen that the saw cylinders 8 carry through the lint that has been removed from the seed of the cotton in the spaces between the ribs, or between the flanges 7, at a fairly definite point, which is known as the "ginning point" of the rib, and is indicated at 13. As previously explained, it is necessary that the ginning surface of the rib, especially at the ginning point, should be very hard metal, as the sand carried through with the cotton would otherwise rapidly wear away the flanges 7 at the ginning point and thereby widen the spaces 9 to an extent that would permit seeds, or particles of seed, to be carried through with the cotton.

To provide for this hardening at the ginning surface, in initially casting the group of ribs, the inside surface of the upper portion of each group, which is the side exposed to the roll box, is cast against a chill plate, which results in making that portion of each group of ribs, including the webs 4 between them, extremely hard. While this hardening presents no difficulties to grinding the slots through the webs to provide the spaces 9 for the gin saws, it does prevent excessive wear at the ginning points 13, which insures the gin holding up in the quality of its work from year to year.

The exact uniformity in width of the spaces

9 is required essentially only in the area of the ginning points 13; but, nevertheless, obtains in my invention, from the ginning points down to the bottom of the ginning surface of the ribs. Above the ginning point 13, it is customary to taper, or gradually widen the spaces to the top of the ginning surface to prevent broken seed, hull particles, motes and similar substances from clogging the spaces above the saw teeth. The slight taper or enlargement of the space above the ginning points permits the revolving roll of cotton in the roll box to keep the spaces wiped clear and free of accumulation.

The arrangement of tapering spaces is illustrated as to a complete group of ribs in Figure 5, in which the tapering portion of the spaces, extending from the ginning points 13 to the upper part of the ginning surface of the ribs, is indicated by the numeral 9a.

The tapering of the spaces 9 can be effected in various ways, as by grinding or filing, although I have devised a preferred means for simultaneously tapering all of the spaces which, however, is not involved in the present invention.

In casting a group of ribs, the integral supports 3 and 5 at the opposite extremities thereof are provided with apertures 14, and in securing the group of ribs in position in the gin, screws are inserted in these apertures and screwed into supporting rails 15 and 16, located above and below the gin saws, respectively. Two screws in each rail are sufficient to hold rigidly in position a group of ribs, whereas the same number of screws are required in each end of individual ribs, in gins as at present constructed.

It will be apparent also that my invention simplifies and reduces the cost of foundry work, in providing for casting the ribs in groups and using the chill plate across the entire group at the ginning point.

I claim:

1. The method of manufacturing gin ribs, which consists in casting a group of equally-spaced ribs integral with supports at their opposite extremities and with relatively thin integral webs connecting corresponding end portions of the ribs and flush with the inner surfaces thereof, and then simultaneously applying to the respective webs a series of grinding wheels spaced apart the distance separating the saws of the gin and each of which is the exact width of the working space for a gin saw, and grinding through the central portion of said webs, throughout the length thereof, with said grinding wheels.

2. The method of manufacturing gin ribs, which consists in casting a group of equally-spaced ribs integral with supports at their opposite extremities and with relatively thin integral webs connecting corresponding end portions of the ribs and flush with the inner surfaces thereof, simultaneously with the casting, chilling the inner side of said portions of the ribs, including said webs, and then simultaneously cutting through the central portion of all of said webs, throughout the length thereof, by means and in a manner to provide equi-distant saw spaces of a uniform width.

3. The method of manufacturing gin ribs, which consists in casting a group of ribs integral with supports at their opposite extremities and with integral webs connecting corresponding portions of the ribs, chilling a portion of the inner side of the group including said webs in the casting operation, and then simultaneously grinding away the material of said webs to an extent to

provide equi-distant saw spaces between the ribs of uniform width.

4. The method of manufacturing gin ribs, which consists in casting a group of equally-spaced ribs integral with supports at their opposite extremities and with relatively thin, integral webs connecting corresponding end portions of the ribs and flush with the inner surfaces thereof, removing the material of said webs to an extent to provide equi-distant saw spaces of uniform width, and of less width than the spaces between the ribs, and then tapering said spaces upwardly and outwardly.

5. The method of manufacturing gin ribs, which consists in casting a group of parallel ribs integral with supports at their opposite extremities, separated throughout a greater portion of their length by equal spaces and with relatively thin, integral webs connecting the remaining portions of the ribs in a manner to lie flush with the inner surface thereof, and then removing the material of said webs to an extent to provide equi-distant saw spaces of uniform width and of less width than the spaces between the ribs.

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15	90
20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150