Feb. 28, 1939. G. C. MORGAN 2,149,146

GIN RIB MOUNTING

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Fig. 1

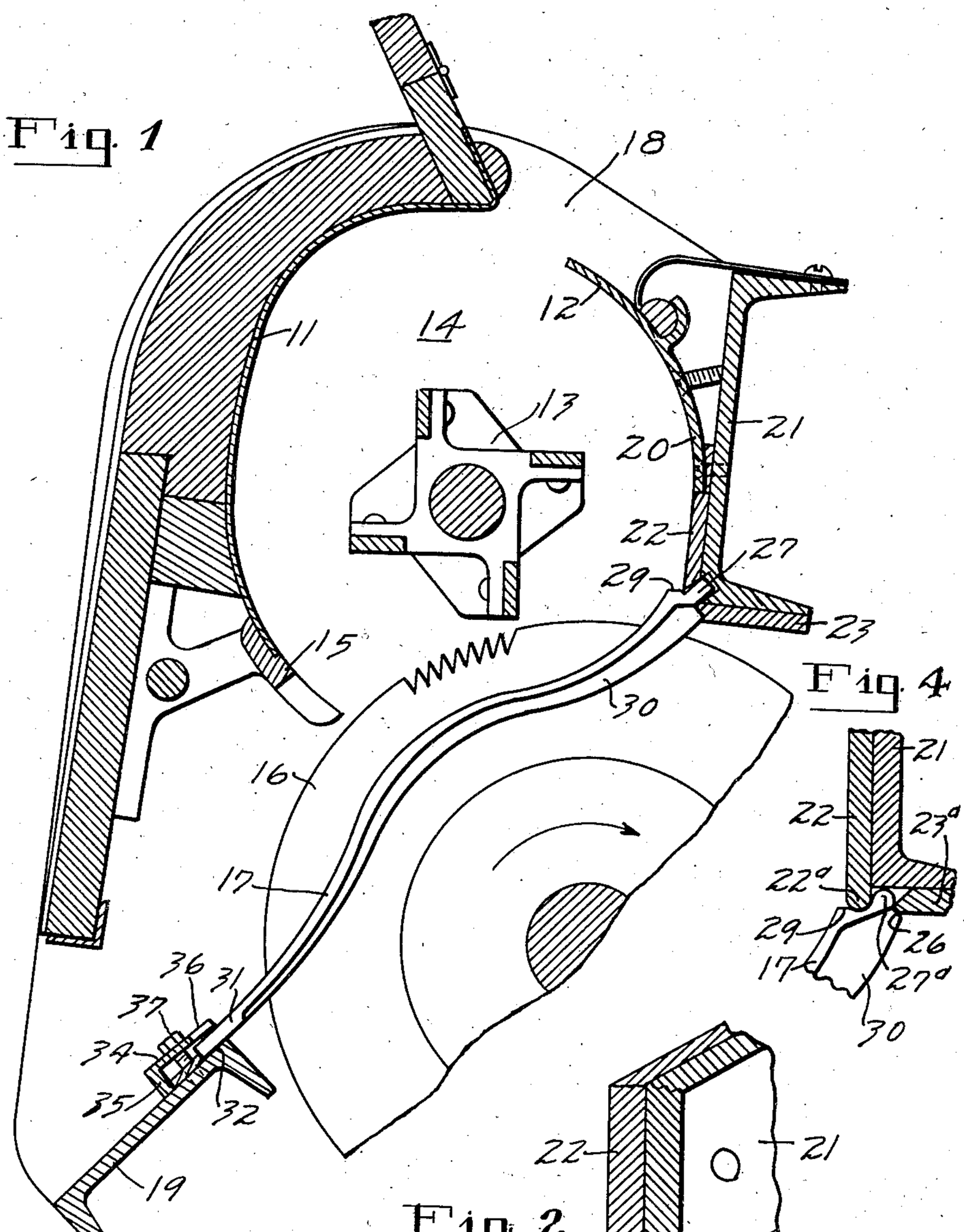



Fig. 4




Fig. 2

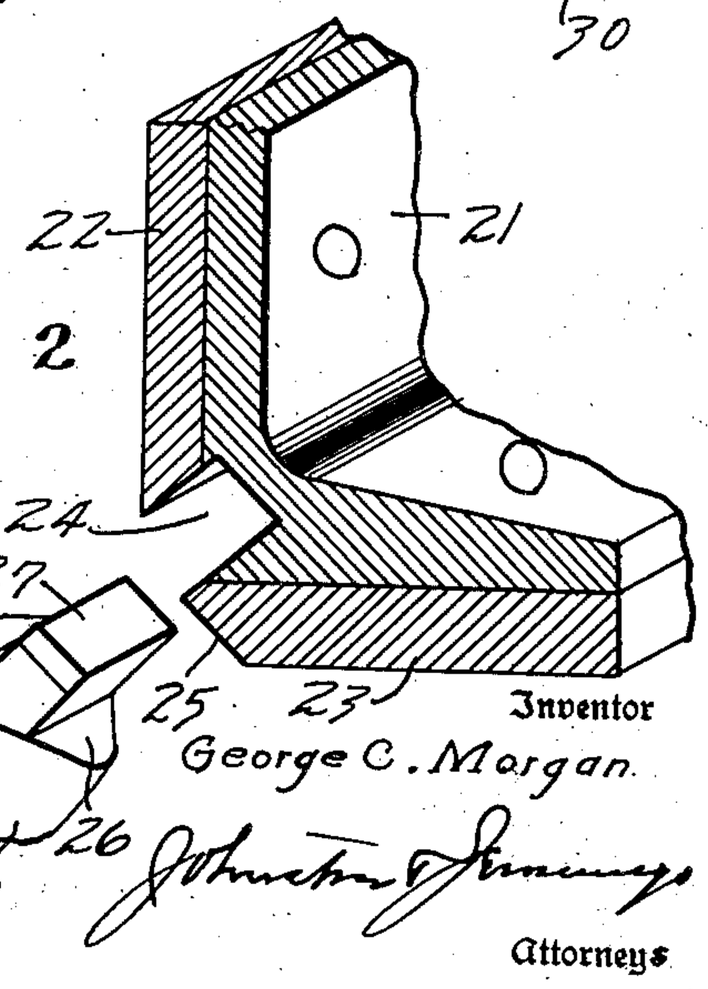
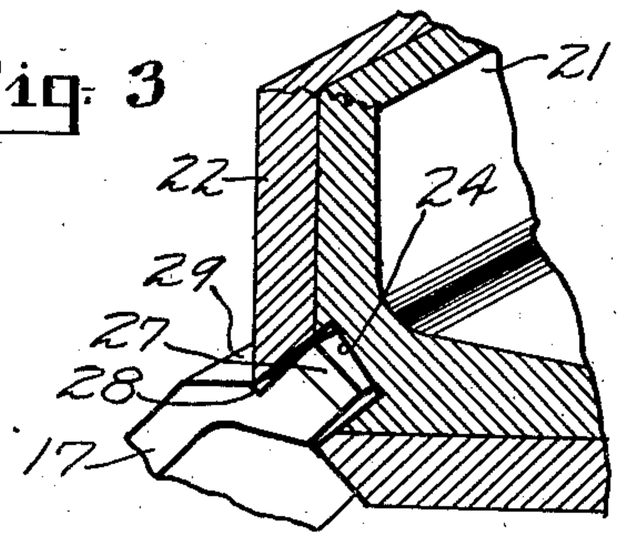



Fig. 3

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GIN RIB MOUNTING

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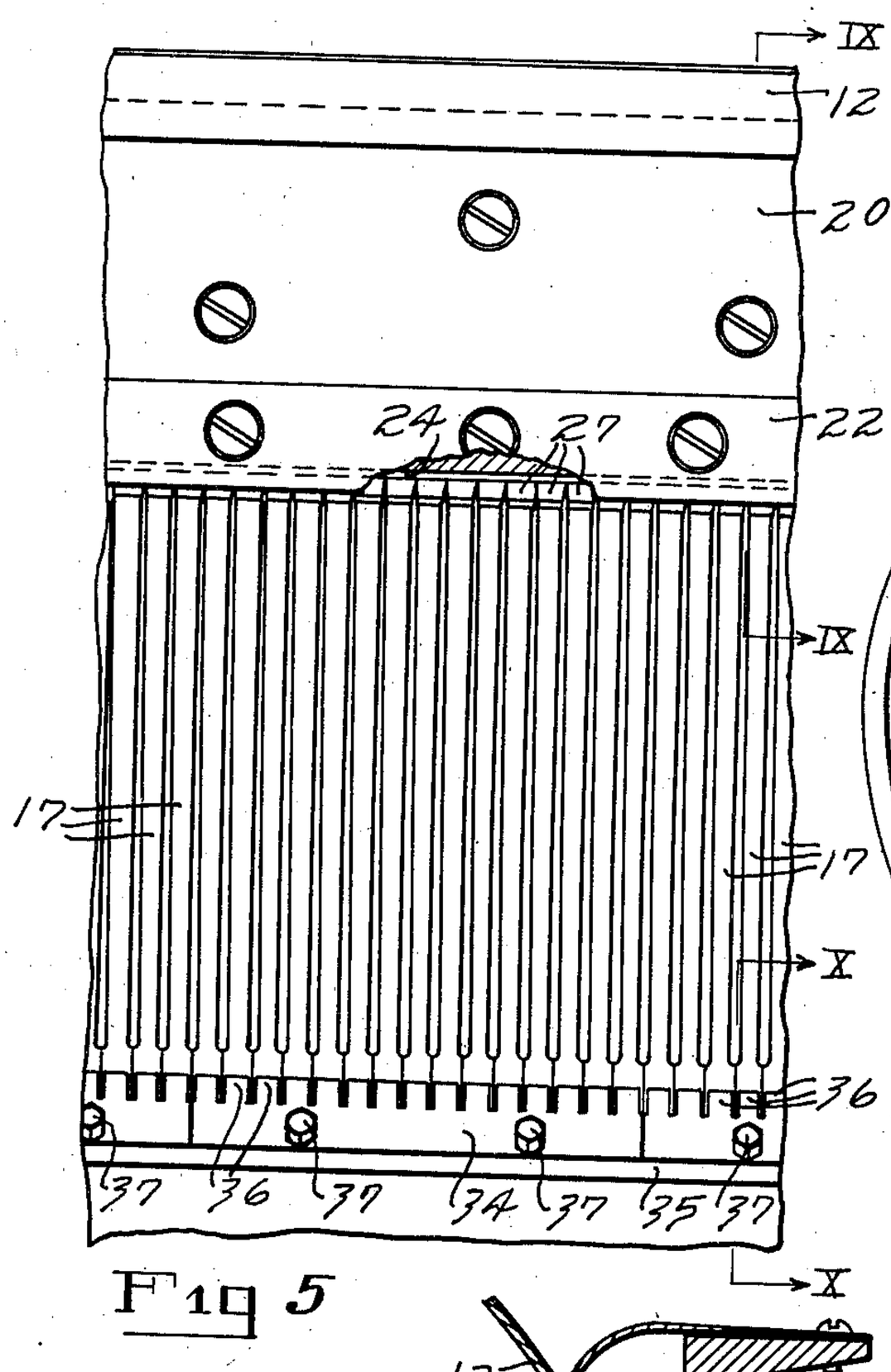



Fig 5

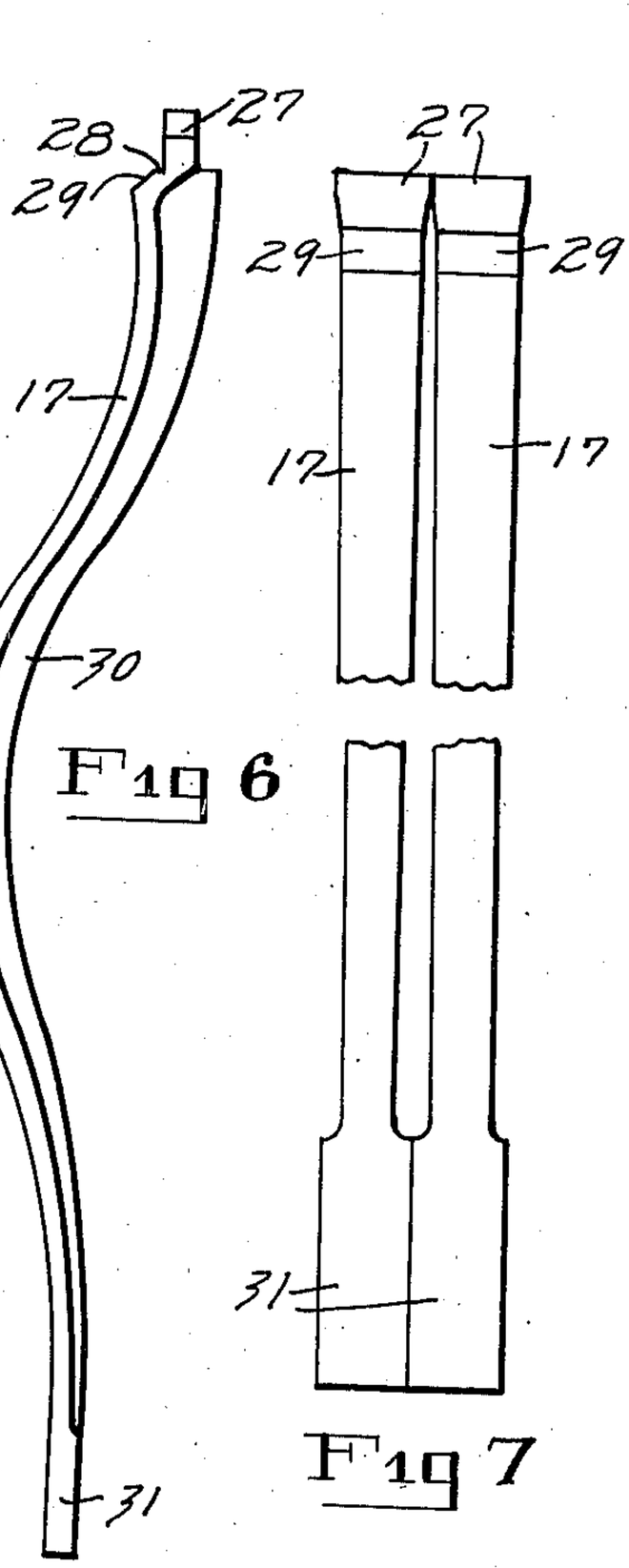



Fig 6




Fig 7

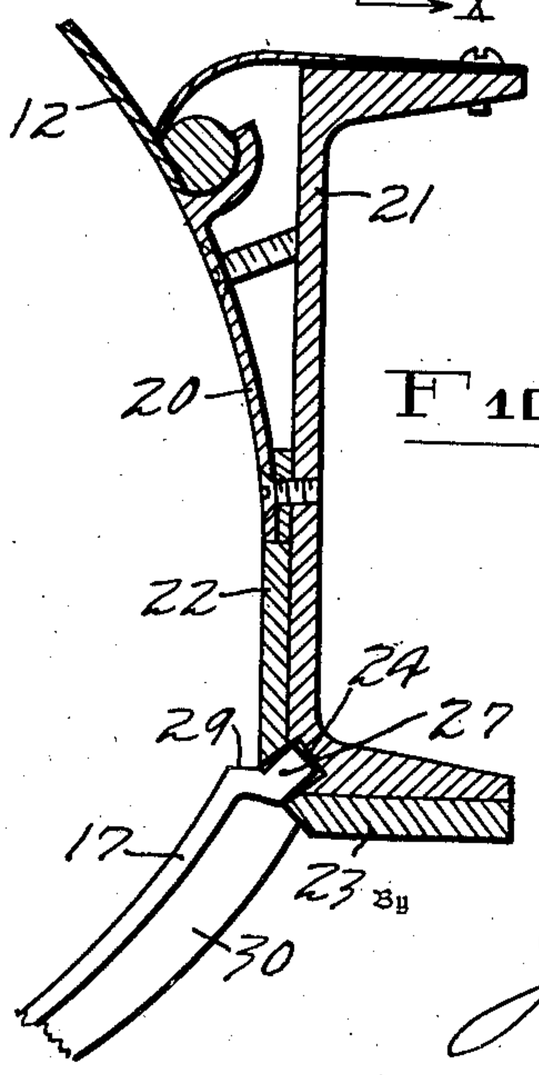



Fig 9

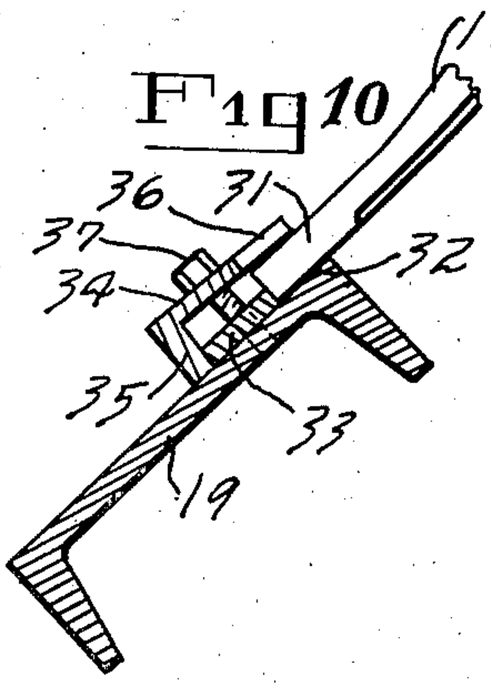
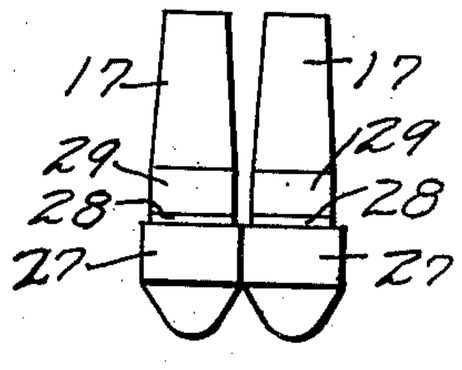



Fig 10

Fig 8

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Patented Feb. 28, 1939 2,149,146

# UNITED STATES PATENT OFFICE

2,149,146

## GIN RIB MOUNTING

George C. Morgan, Birmingham, Ala., assignor to Continental Gin Company, a corporation of Delaware

Application December 13, 1937, Serial No. 179,429

6 Claims. (Cl. 19—62)

My invention relates to a grate fall for gins, and is more particularly concerned with an improved arrangement for the ready, accurate, and rigid positioning of the ribs with reference to the saws, such mounting to make provision for the quick and convenient detachment and interchange of ribs and to insure their correct centering in vertical planes equidistant from the interposed saws.

My invention contemplates the provision of top lugs on the ribs having upper and lower faces accurately machined or ground to provide parallel surfaces which freely interfit between similar parallel edges or surfaces of the upper rib rail and are adapted, when the rib is forced down to its working position, to so bind against such rib rail edges or surfaces as to insure that all ribs in the grate fall will be set and held rigidly in vertical parallel relationship with each other and the interposed saws.

My invention further contemplates broadly the provision of a continuous machined mounting slot for the ribs in the upper rib rail and the designing of the upper rib ends so that in one position they will slip freely into this slot and abut sidewise, and in another position they will firmly and positively interlock with it.

A further feature of my invention is to machine the continuous slot in the upper rib rail with its opposite faces in true predetermined relationship and to form the ribs at their upper ends with accurately ground lugs adapted to interfit loosely in the rib rail slot when the lower ends of the ribs are raised slightly above their normal operating position, and to bind and become interlocked between the upper and lower edges of the rib rail slot when the lower ends of the ribs are forced downwardly into operating position, the interlocking lugs being also ground accurately to a width which by abutment in the slot controls the spacing of the upper ends of the ribs in the continuous rib rail slot.

Heretofore the lower ends of the ribs have been mounted generally without any provision for compensating for variation in size or shape, or when such compensation is provided it has customarily taken the form of a yieldable support against which the rib ends are pressed by a rigid clamp member. This obviously loses rigid mechanical control of the correct centering and positioning of the lower end of the ribs in vertical relation to the saws. My purpose is to machine the under face of the lower rib ends accurately normal to the vertical plane of the rib and then to yieldingly press this prepared face of the rib against a rigid seat, machined and continuous, on the bottom rail. Thus I interpose the yielding element, above the rib and not under it, and cause it to force the machined rib end face against the faced seat on the rib rail. If there is inequality in the lower end of any rib, or if, by reason of the interlock of its upper end in the upper rib rail, it tends to be slightly displaced vertically with reference to the other ribs in the grate fall, the pressure brought to bear on the spring clamp plate will be sufficient to force the lower end of each rib against its seat, holding each so as to care for inequalities in its shape or position.

Another distinctive feature of my invention consists in spring mounting the lower ends of the ribs on the lower rib rail by plates having individual spring fingers, one for each rib, which thus serve independently and yieldingly to hold each rib against a common rib rail seat.

My invention further comprises the novel details of construction and arrangements of parts which, in their preferred embodiments only, are illustrated in the accompanying drawings and hereinafter described.

According to the drawings:—

Fig. 1 is a transverse cross-sectional view through the breast of a linter gin showing in side elevation one of the ribs of the grate fall in working position with relation to its rib rails and the gin saws.

Fig. 2 is an enlarged cross-sectional view in perspective taken through the upper rib rail on one of its embodiments showing the lug on the upper end of the rib also in perspective ready to be introduced on the slot.

Fig. 3 is a view corresponding to Fig. 2 which shows the rib with its lug interlocked and then forced down to operating position to cock the lug in the slot so it will bind against the upper and lower slot walls.

Fig. 4 is a view of a modified form of rib slot in the upper rib rail adapted to produce both a binding and interlocking relationship between the rib lugs and their slot.

Fig. 5 is a fragmental plan view of the grate fall showing the upper rib mounting slot partly broken away.

Fig. 6 is an enlarged side view of one of the ribs.

Fig. 7 is a plan view of a pair of rib rails showing the manner of abutment of their upper and lower rail engaging ends for spacing purposes.

Fig. 8 is an end view of Fig. 7 looking at the upper ends of the ribs.

Fig. 9 is a cross-sectional view enlarged, taken on the line IX—IX of Fig. 5; and

Fig. 10 is a similar view taken on the line X—X of Fig. 5.

Similar reference numerals refer to similar parts throughout the drawings.

While my invention is applicable to various types of gins, I have illustrated it in connection with a conventional showing of a linter type of gin, the breast of which comprises the adjustable seed board 11, the adjustable feed control curve 12, the float 13 rotating in the roll box 14, and the comb 15 at the base of the seed board which is adjustably mounted with relation to the saws 16 which are shown interposed between the ribs 17 of the grate fall. These elements define together the delinting chamber in which the seed, introduced through the feed opening 18, are gradually stripped of their lint by the action of the saws and fall past the comb teeth and down over the grate fall and pass out over the lower rib rail 19. The feed curve 12 forms part of the curved back wall 20 of the roll box, the elements of which are all mounted on the upper rib rail 21 and comprise a lower member 22 joined to, or integral with, the curve 20 and adapted to form an upper portion of the slot for the reception of the lugs on the upper ends of the ribs 17.

As shown in Figs. 4 and 5, this member 22 is shown as a plate mounted by screws or the like on the vertical face of the upper rib rail 21 and a corresponding plate 23 is mounted on the lower flange of said rail. The elements thus rigidly assembled have a slot or rib lug seat 24 machined as indicated with its opposed upper and lower walls in true parallelism and in my preferred arrangement these walls extend continuously and without interruption from end to end of the upper rib rail.

As shown in Figs. 2 and 3, the slot is cut in all three elements 21, 22 and 23 and the forward under corner of the plate 23 is cut away at 25 to abut a face 26 below the lock lug 27 formed on the upper end of each rib.

As shown in Fig. 4, where the rib rail 21 shown is formed of structural steel and which case it is preferable not to machine the slot therein, I use a thicker plate 23*a*, corresponding to 23, and the slot 24 is defined between the plates 22 and 23. Here the lower edge 22*a* of the plate 22 is rounded and forms the upper slot wall, and the rib lugs 27*a* have their upper face shaped to conform to, and interlock with, this rounded edge 22*a* when the ribs assume their working position and bind against the slot walls.

It will be noted that it is not contemplated that the inner ends of the rib lugs 27 or 27*a* shall abut against the inner side wall of the slot and therefore the particular finish or shape at this point is immaterial.

In preparing the ribs 17 to fit into and interlock with the walls of the slot 24, I first machine the lug 27 to produce thereon parallel upper and lower faces at right angles to the rib end face 26 and also at right angles to a shoulder 28 rising above the upper face of the lug. Thus I provide the surfaces 26 and 28 in one plane perpendicular to the plane of the upper and lower machined faces of the lug. The bevel face 29 above the shoulder 28 is a cast face and does not require machining. Using these perpendicular machined faces of the rib and its lug 27 as a centering means, it can be accurately finished throughout its length so that all ribs will be alike throughout the grate fall.

By reference to Figs. 2 and 3, it will be noted that the vertical dimension of the lug 27 is enough less than the vertical width of the slot 24 to permit the lugs 27 of the several ribs to be freely and easily inserted into the slot when the lower end of each rib is raised slightly above its normal working position. To interlock each rib with the slot walls, its lower end is forced downwardly, which cocks the lug in the slot until its under face binds against the forward edge of the lower slot wall and its upper edge binds against the inner portion of the upper slot wall, and the lug is thrust endwise until its vertical shoulder 28 abuts the forward edge of the upper slot wall, and its face 26 abuts the forward edge of the lower slot wall. It is, of course, understood that the relative shape of the rib and slot in cross section is illustrated merely in but two of a variety of arrangements that will permit the ready insertion of the rib lugs into the slot and will obtain the binding or interlocking relation between the rib lug and slot when the rib is forced to its correct operating position.

It will be noted that the aligning faces 26 and 28 take a straight edge bearing against the straight edges of the slot and that the upper and lower faces of the lug provide parallel straight bearing portions that assume binding relation with the upper and lower slot walls that provide parallel straight edge bearings. This manner of interlock insures that the lugs will hold all ribs parallel with their longitudinal central planes vertical to the long axis of the slot.

The lugs 27 and 27*a*, when used in a continuous slot, are all of like width and their side edges are ground or machined to exact size so that they will abut, as shown in Figs. 7 and 8, to space the ribs in their interlocked relation with the upper rib rail. But it is within the contemplation of my invention that the ribs may be interlocked in position in individual slots of suitable shape to permit of the desired binding or interlocking action.

The body of the rib can have any desired cross-sectional contour, it being preferred that the rib shall have a deep tapered under section 30 that will readily guide the saws to correct working position in the grate fall.

The ribs are provided with lower mounting ends 31 which correspond in width with the lugs 27 and abut laterally to center and space the lower ends of the ribs on the lower rib rail.

These rib ends 31 are also machined with parallel upper and lower faces, and a squared off end, as appears more fully in Fig. 10.

The lower rib rail 19 has a machined surface 32 to receive the under face of the rib ends 31 which rest thereon with their end edges abutting a stop strip 33 screwed or otherwise attached lengthwise of the rib rail 19. The rib end 31 is substantially thicker than the stop plate 33 and I provide a sectional spring clamp plate 34 comprising a vertical lower end flange 35 which seats on the rib rail and against the lower edge of the stop strip 33 and rises substantially above the latter. The edge of the clamp plate that will overlie the rib ends 31 is transversely slotted to form spring fingers 36. These parallel slots are cut on centers corresponding to the width of the rib ends 31 and one spring finger 36 is provided for, and disposed to engage over each rib end 31. Clamp screws 37 act to force the spring tongues firmly down against the rib ends 31 and press the latter yieldingly against their faced seat 32. This arrangement makes provision for more or

less pressure to be applied, as may be needed, to bring each rib end **31** to its correct position on the lower rib rail and thus to insure its binding interlock with the upper rib rail. The provision of an individual spring finger for each rib will make provision for variations as may occur in the size of the rib ends **31**.

Bearing in mind that the saws rotate in a clockwise direction, the thrust imparted by the ginning operation to the ribs will be towards the upper rib rail and will cause the rib faces **26** and **28** to abut against the edges of the slot **24** to correctly determine the positioning of the ribs in the direction of their long axes.

While I have shown my invention in several forms, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:—

1. A grate fall assembly comprising upper and lower rib rails and a set of ribs, the upper rib rail having machined upper and lower slot walls, and the ribs having at their upper ends lugs similar to each other and adapted to be freely received between said slot walls when the ribs are not in operating position and to be cocked into interlocked engagement with opposed slot walls thereby rigidly to secure their upper ends in place when the ribs assume operating position.

2. A grate fall assembly comprising upper and lower rib rails and a set of ribs, the upper rib rail having machined upper and lower walls defining a continuous slot, and the ribs having at their upper ends lugs similar to each other and adapted to be freely and loosely seated between said slot walls when the ribs are not in operating position and to be held in position by becoming interlocked between said upper and lower slot walls when the ribs assume operating position.

3. A grate fall comprising ribs having lugs at their upper ends machined to provide transverse parallel upper and lower faces, and perpendicular thereto upper and lower end shoulders, and rib rails on which the ribs are mounted, the upper rail comprising a slot with transverse parallel machined faces, the spacing between said parallel rib faces being less than that between the parallel slot faces so that the lugs will enter freely in the slot and become interlocked when in cocked relation to the slot.

4. A grate fall assembly comprising upper and lower rib rails and ribs, the lower rib rail having a faced seat and the ribs having machined lower seat engaging ends, and spring clamp elements adapted independently to engage and press each lower rib end against said machined rib seat.

5. In a grate fall for gins, the lower rib rail with a continuous machined rib receiving face, the ribs having ends machined to engage said face and abut to space them, and a series of clamp plates overlying the lower rib ends and formed with spring fingers which engage and press said ends against said rail.

6. A grate fall according to claim 5, in which the clamp plate fingers are shaped and spaced so that each engages only a single rib.

GEORGE C. MORGAN.