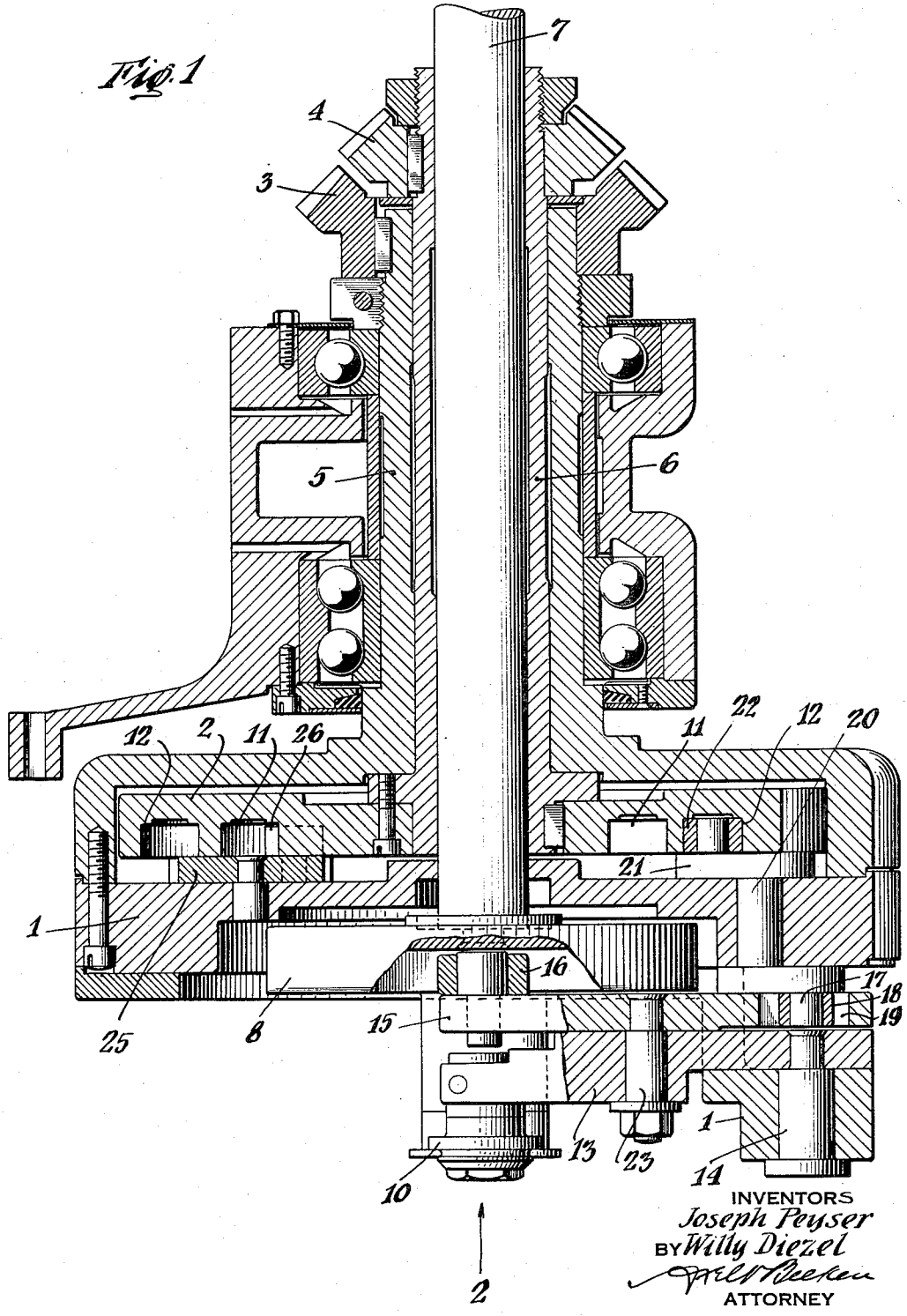
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SEAMING MECHANISM

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Fig. 1



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Fig. 2

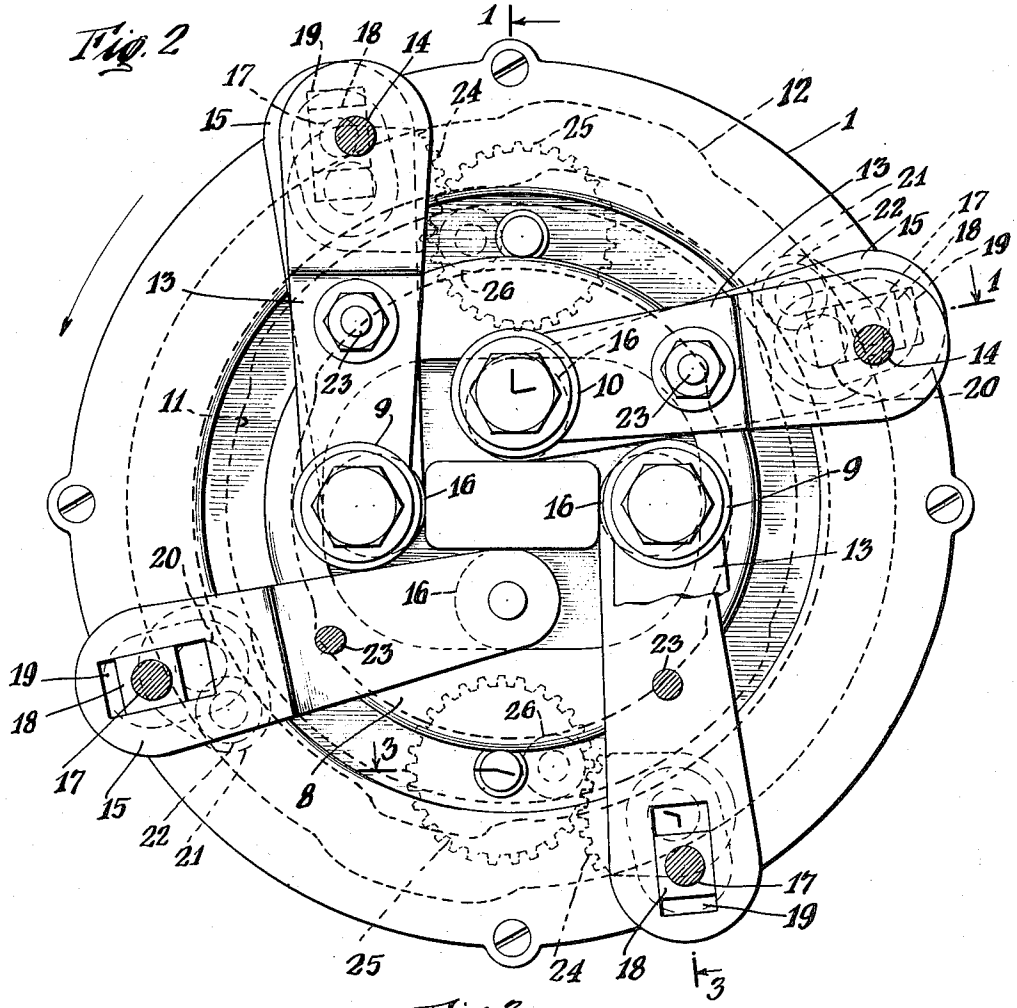
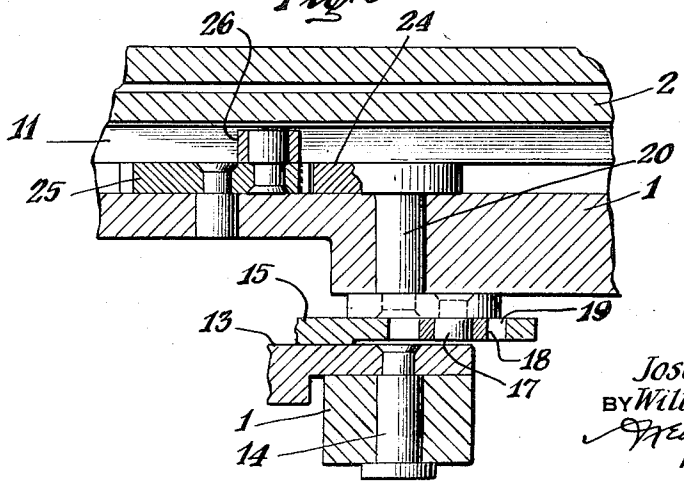


Fig. 3



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Fig. 4

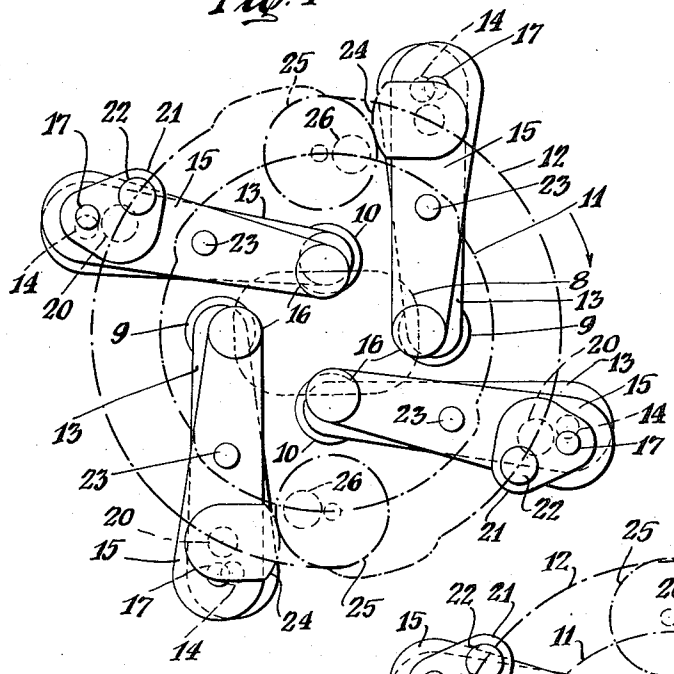


Fig. 5

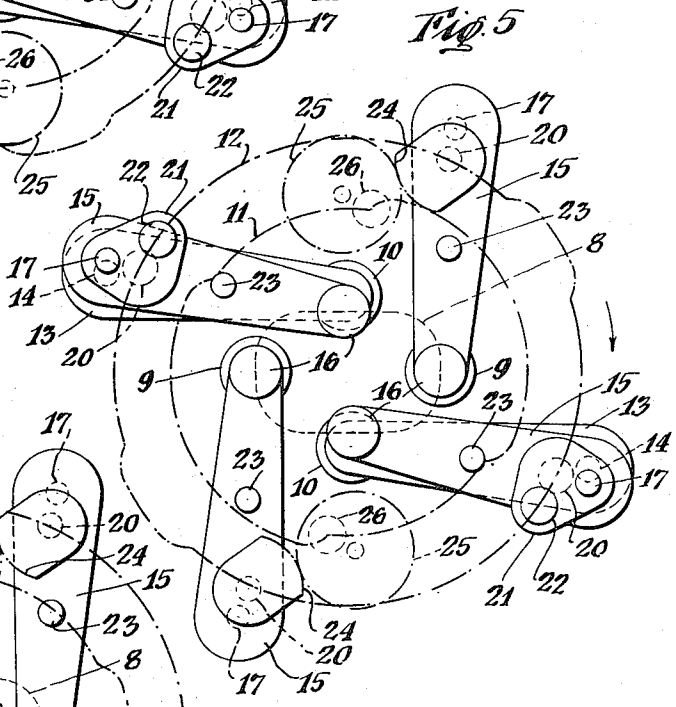
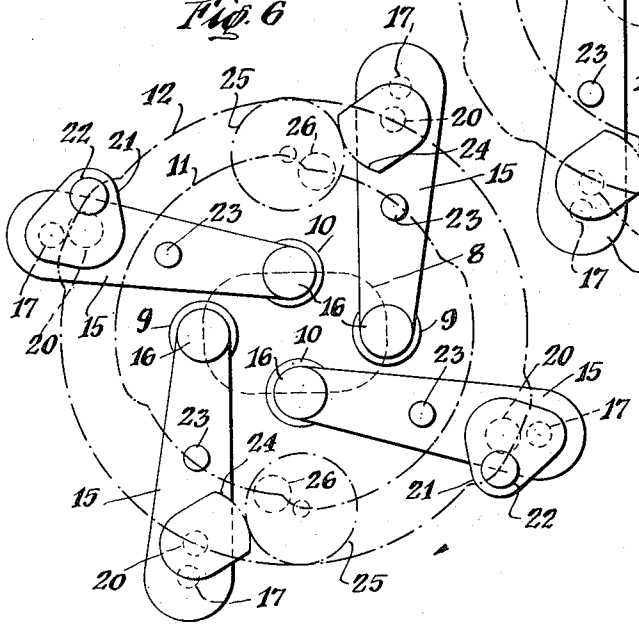


Fig. 6



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Fig. 7

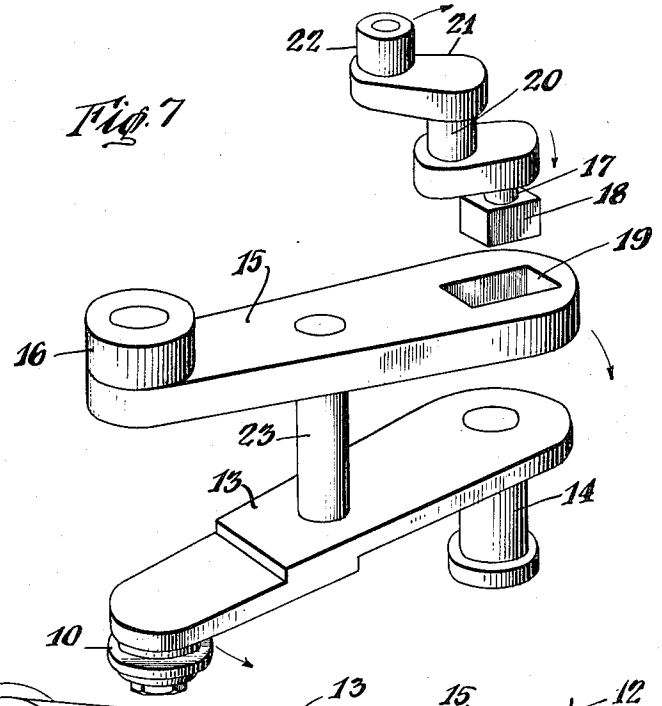


Fig. 8

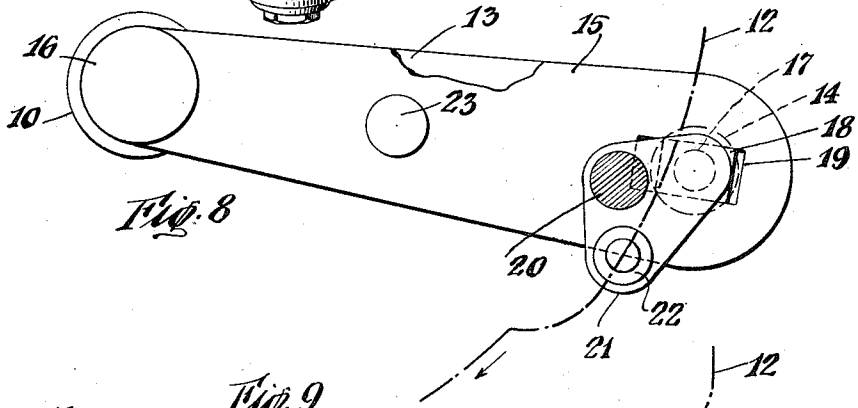
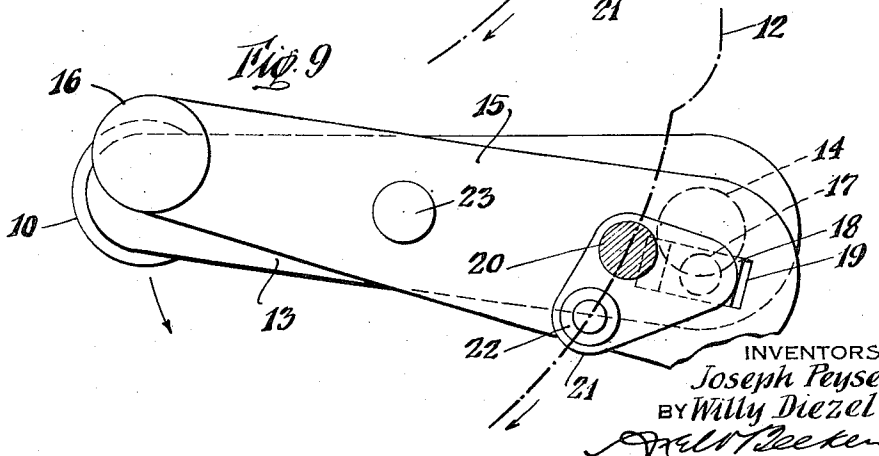


Fig. 9



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2,149,543

SEAMING MECHANISM

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Application December 24, 1936, Serial No. 117,429

6 Claims. (Cl. 113—24)

This invention relates to seaming machines for uniting a cover or end to a container, and has for its main object and feature the provision of means to unite non-circular covers and containers with greater facility and accuracy than heretofore.

In the accompanying drawings the invention is disclosed in a concrete and preferred form in which

Fig. 1 is a vertical sectional view substantially on the plane of irregular line 1—1 of Fig. 2;

Fig. 2 is a bottom plan view looking in the direction of arrow 2 of Fig. 1, with some parts omitted and some in section to more clearly illustrate the invention;

Fig. 3 is a vertical sectional detail view substantially on the plane of irregular line 3—3 of Fig. 2;

Figs. 4, 5 and 6 are diagrammatic plan views, looking from the top, of the seaming-tools and the means for operating the same, Fig. 4 showing all the seaming-tools in non-seaming position, Fig. 5 showing the first-operation seaming-tools in seaming position and the second-operation seaming-tools in non-seaming position, and Fig. 6 showing all the seaming-tools in seaming position;

Fig. 7 is an exploded view in perspective of one of the seaming-tools and the connections for operating it; and

Figs 8 and 9 are two enlarged diagrammatic views showing the relation between the control and carrier levers in different positions.

In the conventional type of seaming machine selected to illustrate one form of the invention, 1 indicates a seaming-head and 2 is a seaming-cam-member. In the present instance, suitable means are provided to rotate these parts, such means here taking the form of gears 3 and 4 and sleeves 5 and 6. Gear 3 and sleeve 5 drive seaming-head 1, and gear 4 and sleeve 6 drive seaming-cam-member 2, the gear ratio used in the present instance being such that seaming-head 1 makes six revolutions to one-half revolution of seaming-cam-member 2. 7 indicates a shaft, here stationary, carrying a follow-cam 8 and the shape of the groove of said follow-cam corresponds to the shape of the non-circular work to be acted upon. There are four seaming-tools used in the present instance, two of which, indicated by 9, constitute the first-operation seaming-tools, and the others of which, indicated by 10, constitute the second-operation seaming-tools. Seaming-cam-member 2 is provided with two seaming-cams 11 and 12, the first-operation seaming-tools being actuated by 11, and the second-operation seaming tools being actuated by 12. In the diagrams Figs. 4, 5, 6, 8 and 9, the seaming-cams are indicated by their center line. As will be understood, the function of the follow-cam is to make the seaming-tools follow the non-circular contour of the work, and the function of the seaming-cams is to produce the in-and-out movement of the seaming-tools to move them into and out of seaming position. Inasmuch as the construction of the first and second-operation seaming-tools and their operating means is substantially the same, it will be convenient to first describe one of the second-operation seaming-tools and thereafter to note the difference between the two sets of tools.

13 indicates a seaming-tool-carrier having a seaming-tool, as 10, in the form of a circular roll at one end, and having its other end pivotally supported in seaming-head 1 by means of a stud 14. 15 indicates a control-lever or cam-lever fulcrumed at both of its ends and having means at each end to turn it about its fulcrum at the other end. In the present instance 16 indicates a cam-roll to engage follow-cam 8, which cam-roll also constitutes a fulcrum for the control-lever. 17 indicates a crank or eccentric actuated by seaming-cam 12, the motion of which is imparted to the control-lever, to swing it around the fulcrum afforded by cam-roll 16, by sliding block 18 and slot 19. Crank 17 also constitutes a fulcrum with respect to which control-lever 15 swings when actuated by follow-cam 8, said fulcrum being provided by means of a pivotal connection between block 18 and crank 17. Crank 17 is carried by stud 20 mounted in the seaming-head, and said stud carries a second crank-arm 21 provided with a cam-roll 22 engaging seaming-cam 12. 23 indicates a connection between the intermediate portions of seaming-tool-carrier or lever 13 and control lever 15, and this connection is fast with respect to 15 and pivotal with respect to 13. It will now be understood that the action of seaming-cam 12 is transmitted to control-lever 15 causing the latter to swing around the fulcrum formed by cam-roll 16, and that this movement, in turn, will be transmitted through connection 23 to seaming-tool carrier 13 causing the latter to turn on its pivot 14. It will be noted that the arrangement of the parts is such that, although pivot 14 is independent of crank 17, the axis of the fulcrum of control-lever 15 at crank 17 is in alinement with the axis of pivot 14 when seaming tool 10 is in seaming position, and further that

the axis of said seaming-tool 10, when in seaming position, is in alinement with that of cam-roll 16. The result is that, when seaming-tool 10 is in seaming position, follow-cam 8 will swing control lever 15 around crank 17 and will also, by reason of connection 23, swing seaming-tool lever 13 around its pivot 14, the two levers 15 and 13 moving as one element in response to the action of follow-cam 8. Thus seaming-tool lever 13 swings on its pivot 14 both in response to the action of follow-cam 8 and that of seaming-cam 12.

By the foregoing arrangement a very accurate movement of seaming-tool lever 13 is obtained as it has been found that there is very little lost motion between the parts and consequently a better seam is produced.

Now with regard to the first-operation seaming-tool, the construction is the same except that, instead of crank 21; a gear sector 24 is mounted on stud 20, which sector engages an oscillating gear 25 mounted on the seaming-head, and this gear carries an eccentrically disposed cam-roll 26 to engage seaming-cam 11. By this construction, it will be observed that all the cranks 17 and pivots 14 can be located equidistant from the center of the device notwithstanding the fact that seaming-cams 11 and 12 are located at different distances from said center, and that therefore the seaming-tool levers can be of equal length and all have the same throw.

We claim:

1. In a non-circular seaming device, a follow-cam; a cam-lever; a cam-roll at one end of the cam-lever to engage the follow-cam to thereby actuate said end of the cam-lever and also constituting a fulcrum on which said cam-lever turns when its other end is actuated; means, at said other end of the cam-lever to actuate it, including a fulcrum on which said cam-lever turns when actuated by the follow-cam; a carrier-lever; a seaming tool, carried by said carrier-lever at one end, the axis of which when in seaming position is substantially in alinement with that of the cam-roll of the cam-lever; means to pivotally support the other end of the carrier-lever independently of but, when the seaming-tool is in seaming position, substantially in alinement with the fulcrum of said other end of the cam-lever; and means to connect the intermediate portions of the two levers to transmit the movements of said cam-lever to said carrier lever.

2. In a non-circular seaming device, a follow-cam; a seaming-cam; a cam-lever; a cam-roll at one end of the cam-lever to engage the follow-cam to thereby actuate said end of the cam-lever and also constituting a fulcrum on which said cam-lever turns when its other end is actuated; means, actuated by the seaming cam, to actuate said other end of the cam-lever, said means including a fulcrum on which said cam-lever turns when actuated by the follow-cam; a carrier-lever; a seaming-tool, carried by said carrier-lever at one end, the axis of which when in seaming position is substantially in alinement with that of the cam-roll of the cam-lever; means to pivotally support the other end of the carrier-lever independently of but, when the seaming-tool is in seaming position, substantially in alinement with the fulcrum of said other end of the cam-lever; and means to connect the intermediate portions of the two levers to transmit the movements of said cam lever to said carrier-lever whereby, when the seaming-tool is in seaming position, the two levers will move in unison in response to the action of the follow-cam and whereby the cam-lever, when actuated by the seaming-cam, will move the carrier-lever to bring the seaming-tool into or out of seaming position.

3. In a seaming device, a seaming-head, a plurality of seaming-tool-levers of equal length on said seaming-head and all pivoted at points equidistant from the center of the device; outer and inner seaming-cams located substantially in a common plane; and means interacting between said seaming-tool-levers and said seaming-cams to impart a substantially equal throw to all of the levers.

4. In a seaming device, a seaming head; a crank carried by the seaming-head; a block carried by the crank; a lever having a slot to receive the block; a seaming-cam carried by said seaming-head; and means to actuate the crank from said cam.

5. In a seaming device, a seaming head; a crank carried by the seaming-head; a block carried by the crank; a lever having a slot to receive the block; a seaming-cam carried by said seaming head; means to actuate the crank from said cam; an oscillating gear carried by the seaming-head; an eccentrically disposed cam-roll on said gear to engage the seaming-cam; and a gear sector connected to the crank and meshing with the gear aforesaid.

6. In a seaming device, a seaming head; a crank carried by the seaming-head; a block carried by the crank; a lever having a slot to receive the block; a seaming-cam carried by said seaming head; means to actuate the crank from said cam including: a second crank connected to the first crank; and a cam-roll carried by said second crank and engaging the seaming-cam.

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