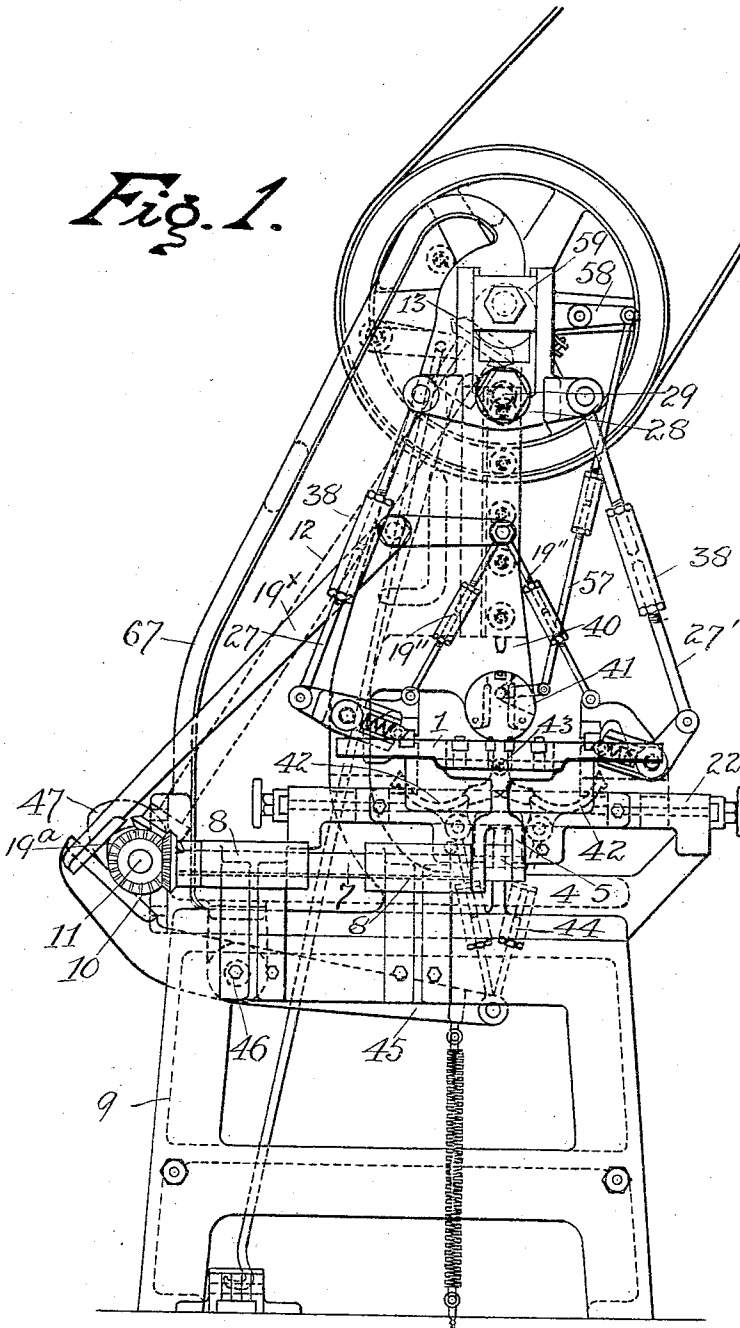


941,076.

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CAN BODY FORMING MACHINE.
APPLICATION FILED DEC. 9, 1908.

Patented Nov. 23, 1909.
5 SHEETS—SHEET 1.

Fig. 1.



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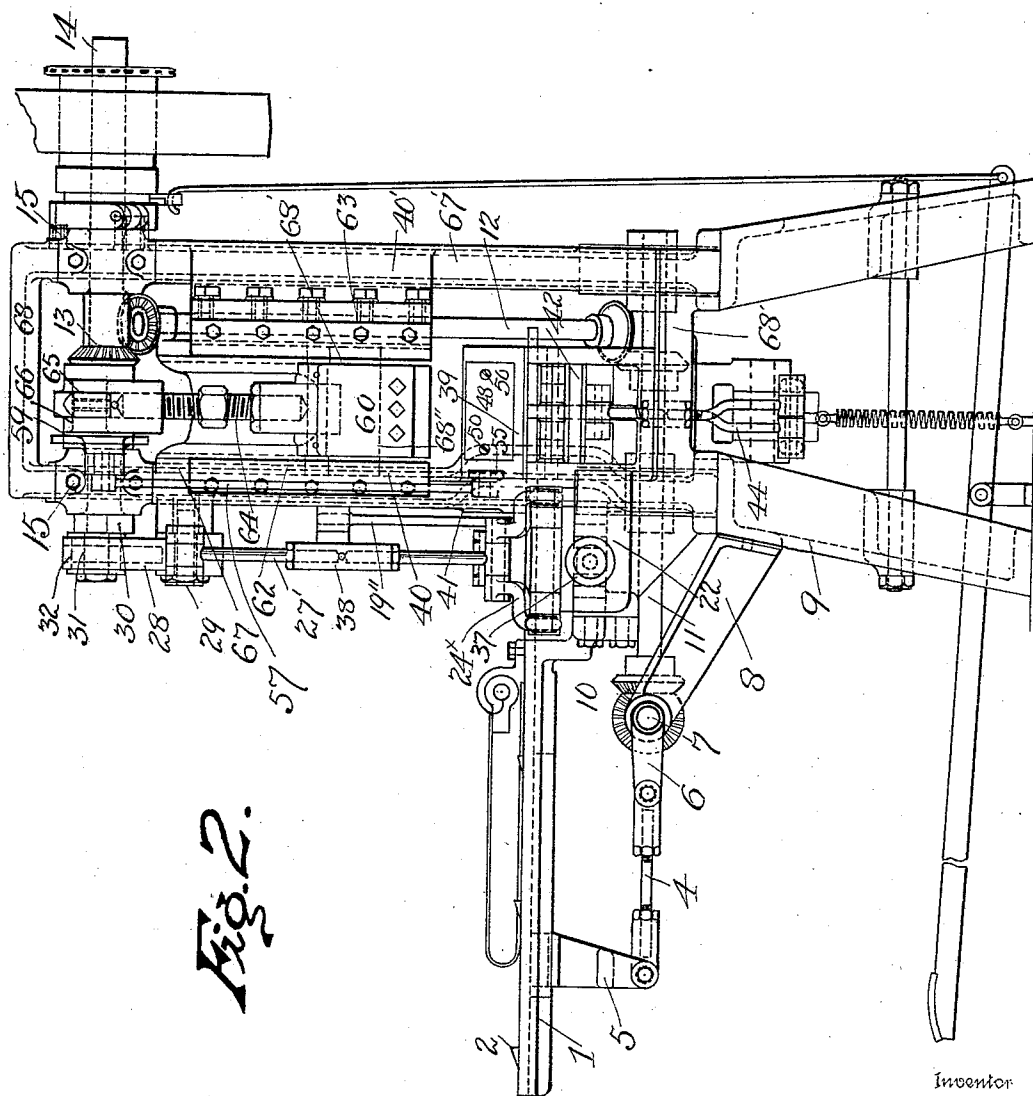


Fig. 2.

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6 SHEETS—SHEET 3.

Fig. 3.

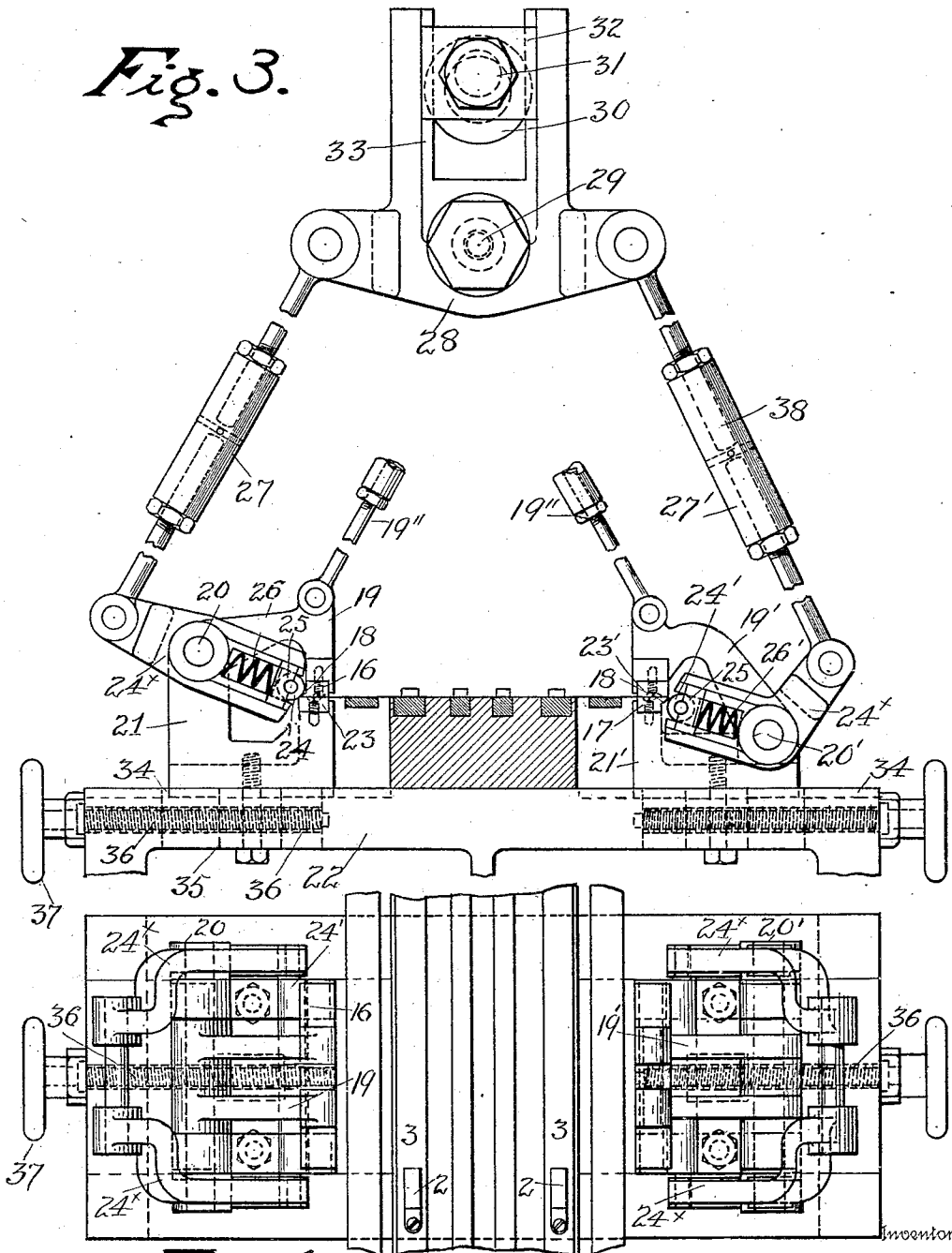


Fig. 4.

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5 SHEETS—SHEET 4.

Fig. 5.

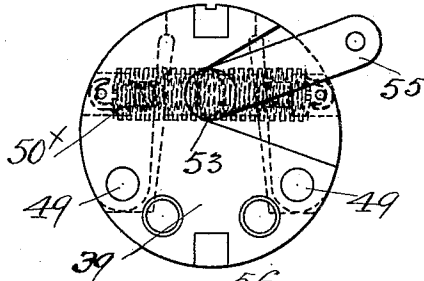


Fig. 6.

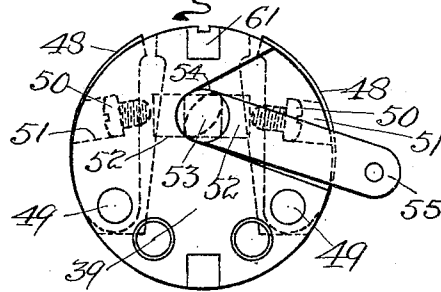


Fig. 7.

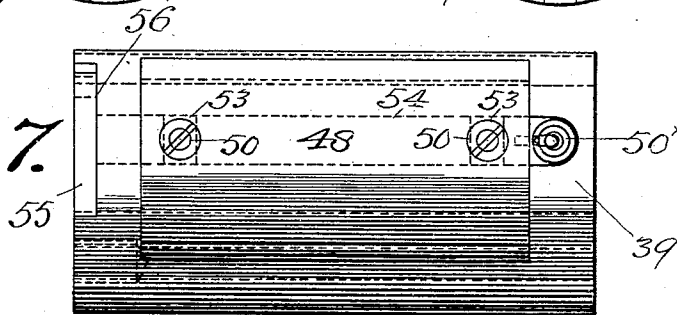


Fig. 8.

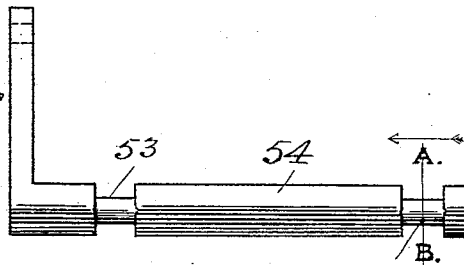
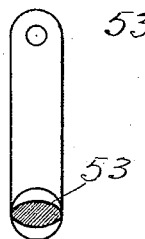


Fig. 9.



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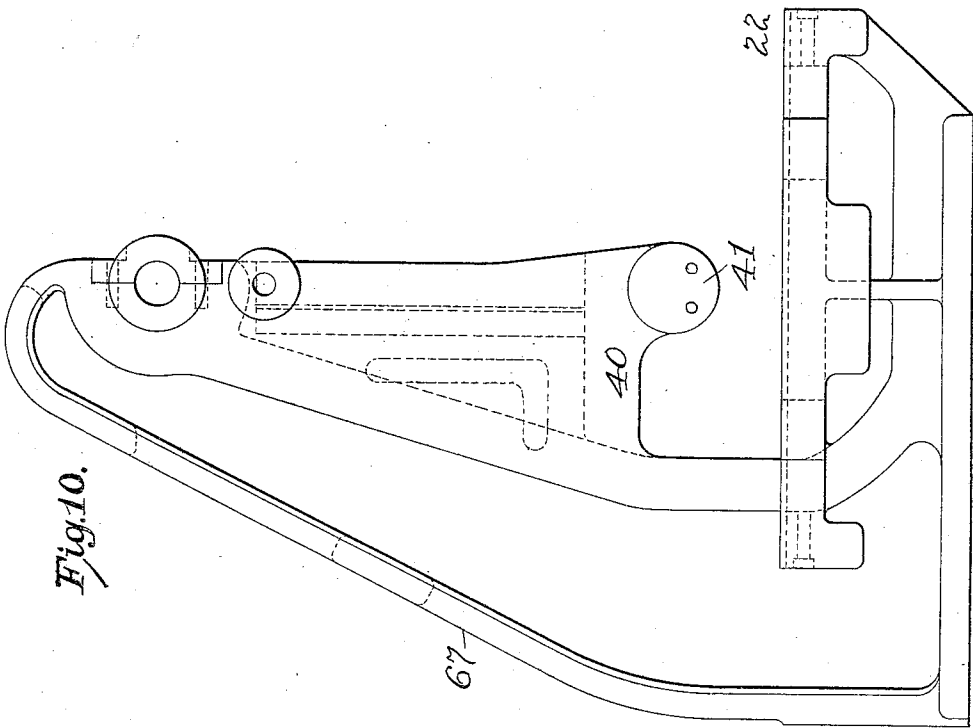
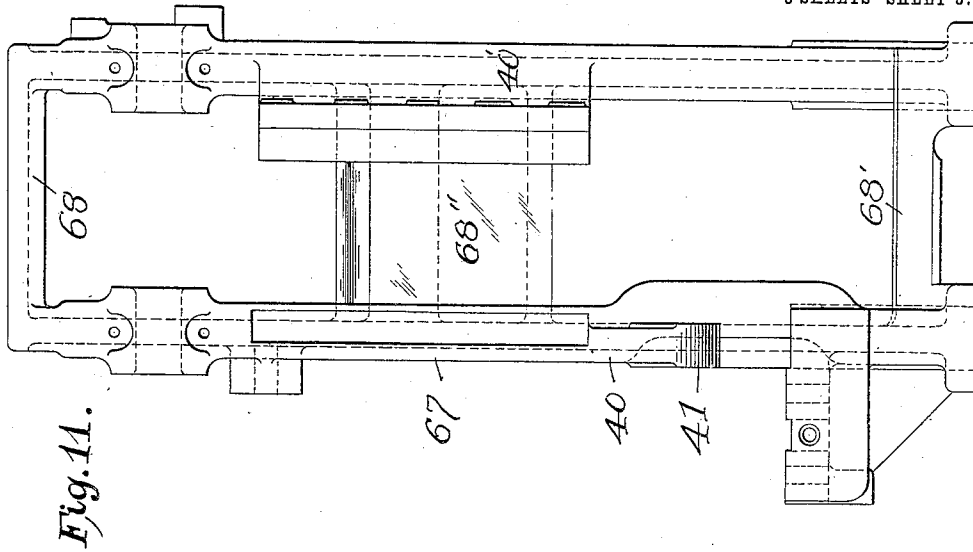
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6 SHEETS—SHEET 5.



Attest:

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Bent. M. Stahl.

Inventor:

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UNITED STATES PATENT OFFICE.

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CAN-BODY-FORMING MACHINE.

941,076.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed December 9, 1908. Serial No. 466,652.

To all whom it may concern:

Be it known that I, WHITNEY W. JONES, a citizen of the United States, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Can-Body-Forming Machines, of which the following is a specification.

My invention relates particularly to means for forming can bodies, and it includes edging means for the blanks, and locking means, the latter involving certain improvements concerning an expanding horn on which the body blank is folded and locked, and also certain improvements relating to the arrangement of a hammer.

My invention also includes certain other features and the arrangement and construction of parts as will be hereinafter particularly described and pointed out in the claims.

In the accompanying drawings:—Figure 1 is a front view of a machine embodying my invention; Fig. 2 is a side view of the said machine; Fig. 3 is a detail view, partly in section, relating to the edging mechanism; Fig. 4 is a plan view of some of the parts shown in Fig. 3; Figs. 5, 6, 7, 8 and 9 are views relating to the horn and the parts immediately associated therewith; Fig. 10 is a front view of the main frame of the machine; Fig. 11 is a side view of the main frame.

The blanks for making the can bodies are placed upon a table 1 to be engaged by fingers 2 of feed slides 3 which are reciprocated by means of a link 4 connected to a depending arm 5 connected with the feed slides, the said link 4 being operated from a crank 6 on a shaft 7 journaled in brackets 8 extending from the base casting 9 of the machine. This shaft 7 is driven through beveled gears 10 from a shaft 11 extending longitudinally along one side of the machine, the said shaft 11 being, in turn, driven from an inclined shaft 12 extending upwardly and connected, through beveled gears 13, with the main driving shaft 14, having its bearings in the main frame of the machine at 15, said main frame to be hereinafter particularly described. The blanks are fed by the feed mechanism just described to edging mechanism, which consists of edging anvils 16, 17, each of which is provided with an inclined edge, as at 18, over which the edge of the blank is bent. The anvil 16 is carried by a movable arm 19 pivoted at 20 to a

standard 21, which is supported by a table 22 forming a part of the main frame of the machine, being cast therewith and extending toward the front of the same, as shown in Figs. 2 and 11. Coöperating with the anvil 16 is a clamping block 23 supported on the standard 21, this block, together with the anvil, serving to clamp the edge portion of the blank between them, leaving the extreme edge projecting for the bending thereof over the inclined edge 18 of the anvil 16.

The edging anvil 17 is supported upon a standard 21' which, like the standard 21, is supported upon the table 22, and this anvil 17 coöperates with a clamping block 23' carried by a swinging frame or arms 19' pivoted at 20' to the standard 21'. The edging tools consist of rollers 24, 24', each carried by a block 25 guided in arms 24* and backed by springs 26, 26'. One pair of these arms are of straight form, as shown on the left of Fig. 3, and these are pivoted on the same pin 20 as the clamping arm 19. The set of edging tool carrying arms at the right of Fig. 3 are of substantially right angular form, and this pair of arms is pivoted on the bolt or pivot pin 20' about which the clamp arm 19' turns. The arms or carriers for the edging tools are connected with links 27, 27' which, in turn, connect with a rocking head 28 pivotally supported at 29 to the upper main frame, the said rocking head being operated from the main shaft 14 by a disk 30 thereon having a crank pin 31 engaging a block 32 guided in slideways 33 of the rocking head.

Supposing the blank has been fed to the edging mechanism with its side edges in engagement with the edging anvils 16 and 17, and projecting slightly beyond the same and held firmly in proper relation thereto by the clamping means, it will now be seen that, by a movement of the rocking head 28 in the proper direction, the edging tools, consisting of the rollers, will be moved across the inclined edges of the anvils so that, on one side, the edge of the blank will be bent upwardly, and, on the other side of the blank, the edge will be bent downwardly, so that, when the blank is folded into substantially cylindrical form, these bent edges will be in proper position to be locked together for the formation of the side seam. In the operation of the edging tools, the rollers are adapted to yield backwardly and accommo-

date themselves to the inclined edge of the anvils, and to compensate for variations in the material operated on. By my arrangement no special guiding means are rendered
 5 necessary, the yielding rollers, having the movement across the inclined edges of the anvils, performing the bending operation with ease and certainty, and in a manner to accommodate themselves to the material being
 10 operated upon.

The edging mechanism may be adjusted to suit blanks of different sizes, by adjusting the standards or brackets 21, 21' each of which has a portion guided in a way 34 in
 15 the edging table 22, and each also has a stud, as at 35, projecting therefrom into a slot in the edging table, the said stud being engaged by an adjusting screw 36 having its bearings in the edging table, and operated
 20 by a hand wheel 37 there being an adjusting screw for each standard. By turning the screws, the whole edging mechanism, including the cams, the anvils, the edging tools, their carriers, and the operating connections
 25 may be adjusted toward and from each other to suit blanks of different sizes. The links 27 27', for purposes of adjustment, have each a turn buckle, as at 38. The clamping arms 19, 19' are operated by links
 30 19'' connected with a lever 19*, which is operated from a cam 19^a on the shaft 11.

After the blank has been subjected to the operation of the edging mechanism, it is fed onward by the feed mechanism beneath a
 35 horn 39. This horn is connected with a laterally extending portion 40 of the main frame, which laterally extending portion has a boss 41 depending therefrom to which the horn is attached. The horn projects in a
 40 direction longitudinally of the machine and toward the rear, as shown in Fig. 2, it being understood that, for purposes of this description, the side of the machine, at the left of Fig. 2, is referred to herein as the front
 45 side of the apparatus. With this horn is associated folding mechanism of substantially ordinary form, consisting of a pair of wings 42 pivotally supported at 43 and connected by links 44 with an operating lever
 50 45 extending laterally of the machine, being pivoted at 46 and having an arm to be operated by a cam 47 on the side shaft 11 before described. These folding means operate substantially as in ordinary practice to fold
 55 the blank about the horn so that its bent edges may engage each other for the formation of the seam. The horn is of an expandible character, having movable sections 48 pivoted at 49 in the horn, and each having a
 60 pair of screws 50, one near each end, located in recesses 51 and engaging, at their inner ends, with blocks 52 on each side of cam shaped portions 53 of a shaft 54 journaled in the horn at a point slightly above its center,
 65 and extending longitudinally thereof.

This shaft, at one end, has an arm 55 working in a recess 56 of the horn, the said arm being connected by a link 57 with a lever 58 operated from a cam or eccentric 59 on the main shaft 14. By this means the expanding
 70 sections of the horn are moved outwardly at the proper time, and then withdrawn. This action takes place against the tension of a spring 50* connecting the expanding sections and tending constantly to draw
 75 them inwardly.

It will be observed that the expanding sections of the horn are operated by means which applies the power thereto at different points along the horn or the expanding sections thereof, and, as shown herein, these
 80 different points are located near the ends of the expanding sections and equidistant from the end portions, so that, in the operation of expanding the horn, the movement at one
 85 end of the expanding section will be exactly the same as that at the other end, thus securing uniformity in the operation and in the work produced. I secure this result by the employment of the cam shaft extending
 90 longitudinally of the horn and connected with the expanding sections at different points along the same, so that the movement throughout the expanding sections is even and uniform in respect to the position of the
 95 interlocking edges, and thus the seam, throughout its length, will be locked uniformly. The expanding mechanism for the horn is arranged entirely independent of the hammer mechanism, so that it does not depend
 100 in any way, upon the adjustment of the hammer or parts associated therewith. The hammer is shown at 60, extending with its edge in a direction longitudinally of the machine to conform to the anvil 61 in the
 105 horn, guides being provided for the hammer at both its front and rear vertical edges, as shown at 62, 63. These guides are supported in the laterally extending portions of the main upper frame, shown at 40 and 40'.
 110

Power is applied to the hammer by a pitman 64 pivotally connected with the hammer and having a yoke or strap 65 at its upper end embracing a crank arm 66 forming
 115 a part of the main shaft 14. By the construction and arrangement of the hammer described, the power is applied substantially centrally or in the longitudinal plane of the guide bearings, so that the blow delivered by the hammer at one end thereof will be
 120 just the same as that delivered by the other end, thus insuring uniformity of the result throughout the seam. To this uniform result the means above described for adjusting the expanding parts of the horn also contribute,
 125 for it will be seen that the expanding portions of the horn will move uniformly throughout their extent. In this respect my invention is an improvement over known forms of expanding horns in which
 130

the movable section is adjusted by a connection therewith only at one point, in consequence of which looseness due to wear will result in allowing one end of the movable section to be displaced in relation to the other end, and thus irregularities will occur in the locking of the seam. The frame of the machine includes the main base or leg portion 9, which is surmounted by the main casting or upper portion, the latter including the edging table cast integral with the upwardly extending standard 67 which rises from the edging table at the left hand side thereof, Fig. 1, and extends, in inclined position, to a point centrally of the machine, at which point the bearings for the upper main shaft are located. There is one of these standards at both the front and rear of the machine, and each is provided with a laterally extending portion, as at 40, 40', carrying the guideways for the vertically movable hammer. The laterally extending portion 40 at the front of the machine carries a support for the horn, which support depends from the said laterally extending portion. The other laterally extending portion 40' at the rear has a free space opposite the horn. At the top the two standards are connected by an integral arched portion 68. By casting the edging table integral with the standard 67 and providing a rear standard, as at 67', similar to the standard 67, and by connecting these standards by the arch 68, the base cross piece 68' and the middle cross piece 68'', and by supporting the horn on the frame thus formed and providing guides for the hammer in this integral frame, I secure a rigid structure and prevent parts from becoming disaligned after constant use, the edging mechanism, the horn and the hammer all bearing a fixed relation to each other and to the folding mechanism.

I claim as my invention:—

1. In a machine of the class described, edging mechanism, including clamping means for the blanks having edging anvils, and edging tools, consisting of rollers, carriers for the rollers in which the said rollers are adapted to slide, and springs for pressing the rollers to their work, and means for operating the carriers to move the rollers transversely of the edges of the anvils, substantially as described.

2. In combination in a machine of the class described, edging tools, carriers pivotally supported and carrying said edging tools, anvils having inclined edges, and pivoted clamping arms pivoted coaxially with the carriers, with means for operating said clamping arms and said pivoted carriers, substantially as described.

3. In combination in a machine of the class described, anvils over which the edges of the blanks are bent, edging tools, pivotally supported carriers for the said edging tools,

clamps pivotally supported and mounted coaxially with the tool carriers, and means for operating the tool carriers and clamps, substantially as described.

4. In combination in a machine of the class described, blank edging mechanism, including anvils, edging tools consisting of rollers, a pair of arms for each of the rollers, each of said arms having a guideway for the edging tools and a spring for pressing the tool to its work, means for operating the carriers, and clamping means for the blanks pivoted coaxially with the edging tool carriers, substantially as described.

5. In combination in a machine of the class described, a table, a pair of standards adjustably mounted on the said table, each of said standards carrying anvils over which the edges of the blanks are bent, edging tool carriers pivotally mounted on the said standards, and clamps pivotally mounted on the said standards coaxially with the edging tools, with means for operating the carriers and clamps, substantially as described.

6. In combination in a machine of the class described, anvils over which the edges of the blanks are bent, bending tools, pivotally mounted carriers therefor, and means for operating the said carriers, including a rocking head, with means for operating the same, and connections between the said rocking head and the tool carriers, substantially as described.

7. In combination in a machine of the class described, anvils over which the edges of the blanks are bent, bending tools, carriers therefor operating in reverse directions in respect to each other, one of said carriers being bent, a rocking head, and connections between the said rocking head and the said carriers, substantially as described.

8. In combination a horn having a central fixed portion, and a laterally movable portion pivoted to the fixed portion, a cam shaft mounted in the fixed portion, a laterally movable block mounted in the fixed portion and operated by the cam shaft, and an adjusting screw having its head accessible from the outer side of the laterally movable portion and bearing upon the laterally movable block, substantially as described.

9. In combination in apparatus of the class described, edging mechanism, a horn, a hammer and folding wings, a horizontal upper main shaft, a horizontal side shaft, an inclined shaft connecting the side shaft with the main shaft, connections from the main shaft to the edging tools and hammer, respectively, for operating the same, clamps associated with the edging mechanism, connections for operating the said clamps consisting of the lever 19* and the depending links 19'', the folding wings and means for operating the same consisting of the lever 45 extending beneath the horn and the links ex-

tending upwardly therefrom, said levers 19^x and 45 being operated from the side shaft, substantially as described.

10. In combination in a machine of the
5 class described, edging mechanism, a horn
and a hammer, and a frame having a table
for supporting the edging mechanism connected with the upwardly extending front
standard, a second standard at the rear of the
10 machine, said standards being connected
with each other and having each a guideway

for the hammer, said guideways being supported on laterally extending portions of the standards, and a support on the front standard for the horn, substantially as described. 15

In testimony whereof, I affix my signature in presence of two witnesses.

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Witnesses:

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V. BERNARD SIEMS.