Dec. 28, 1926. 1,612,564

J. BRENZINGER

SEAMING MACHINE

Filed Oct. 25, 1923 9 Sheets-Sheet 1

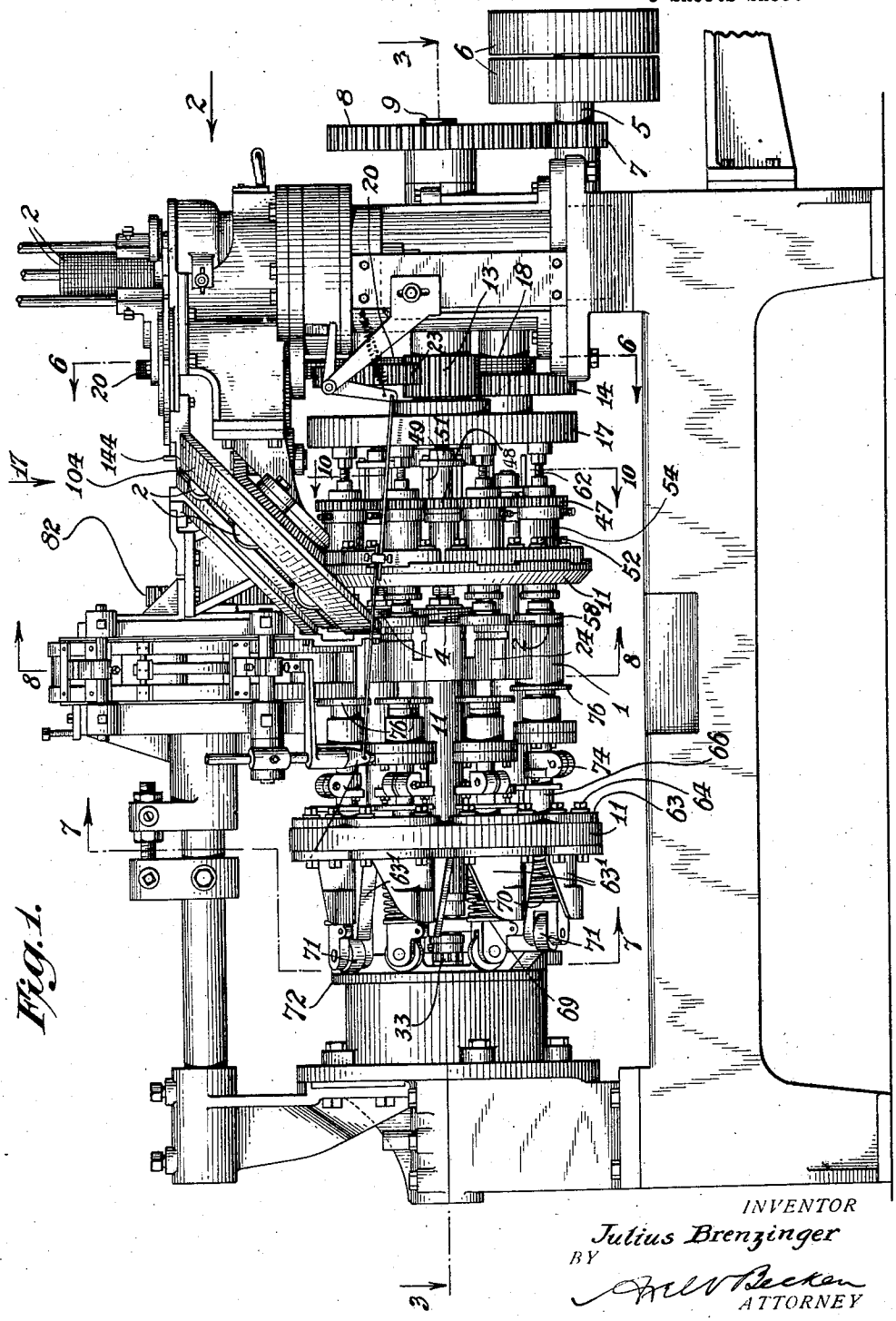


Fig. 1.

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SEAMING MACHINE

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Fig. 2.

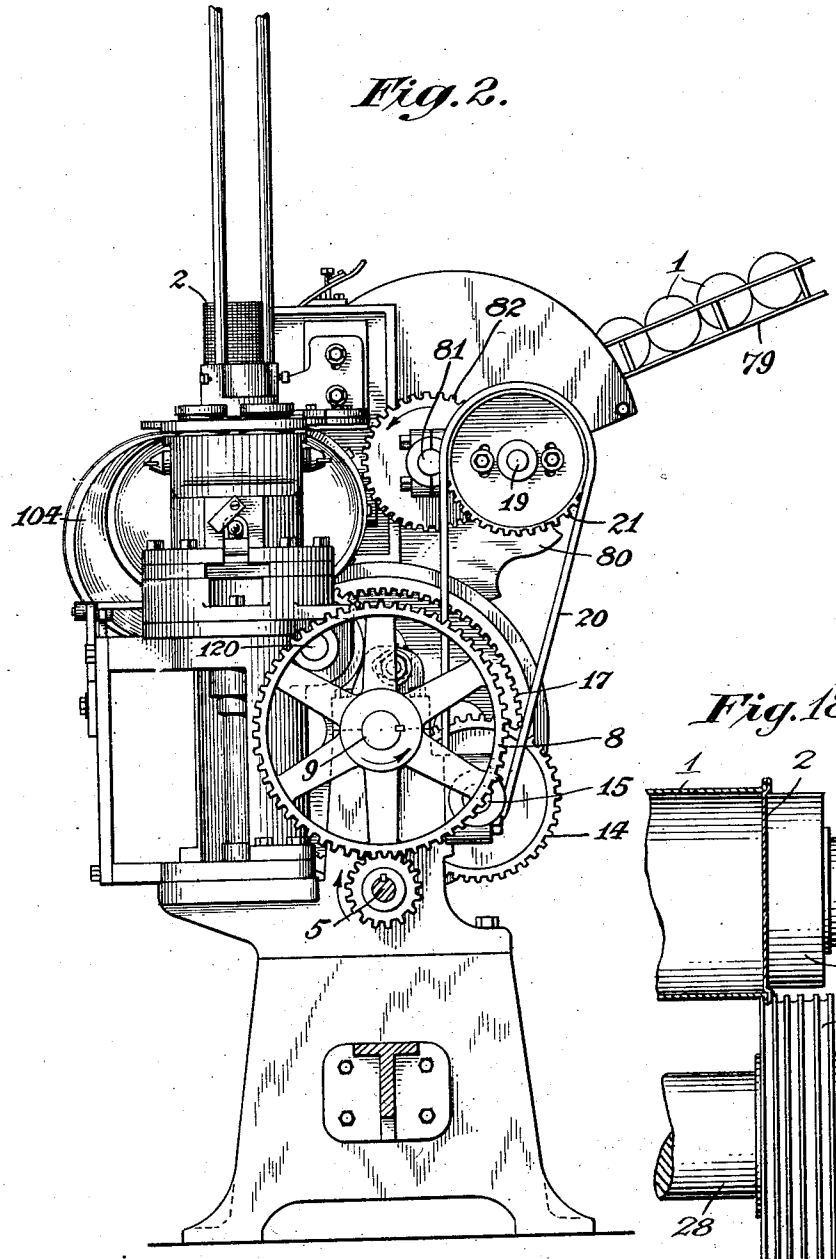


Fig. 18.

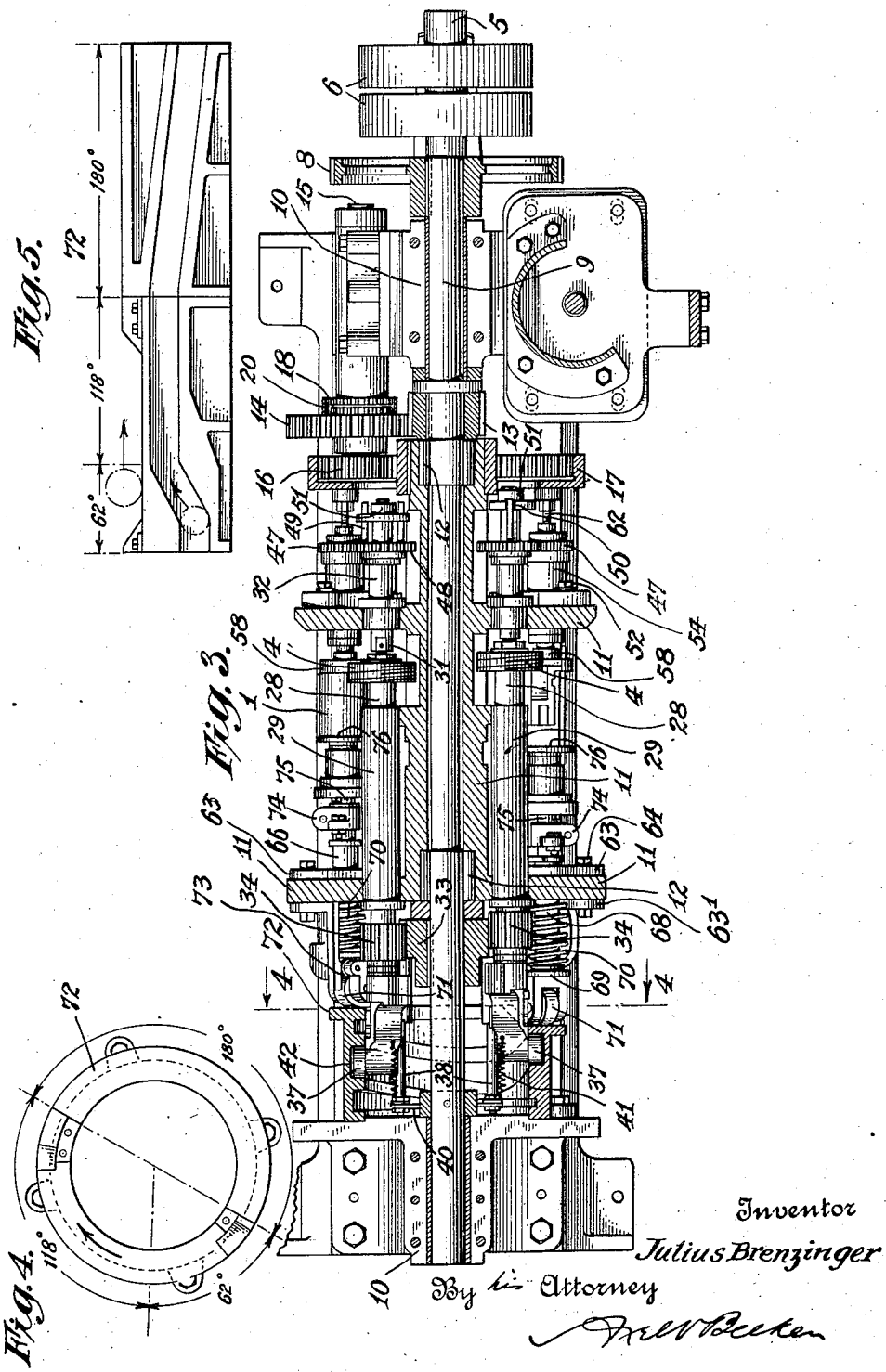
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SEAMING MACHINE

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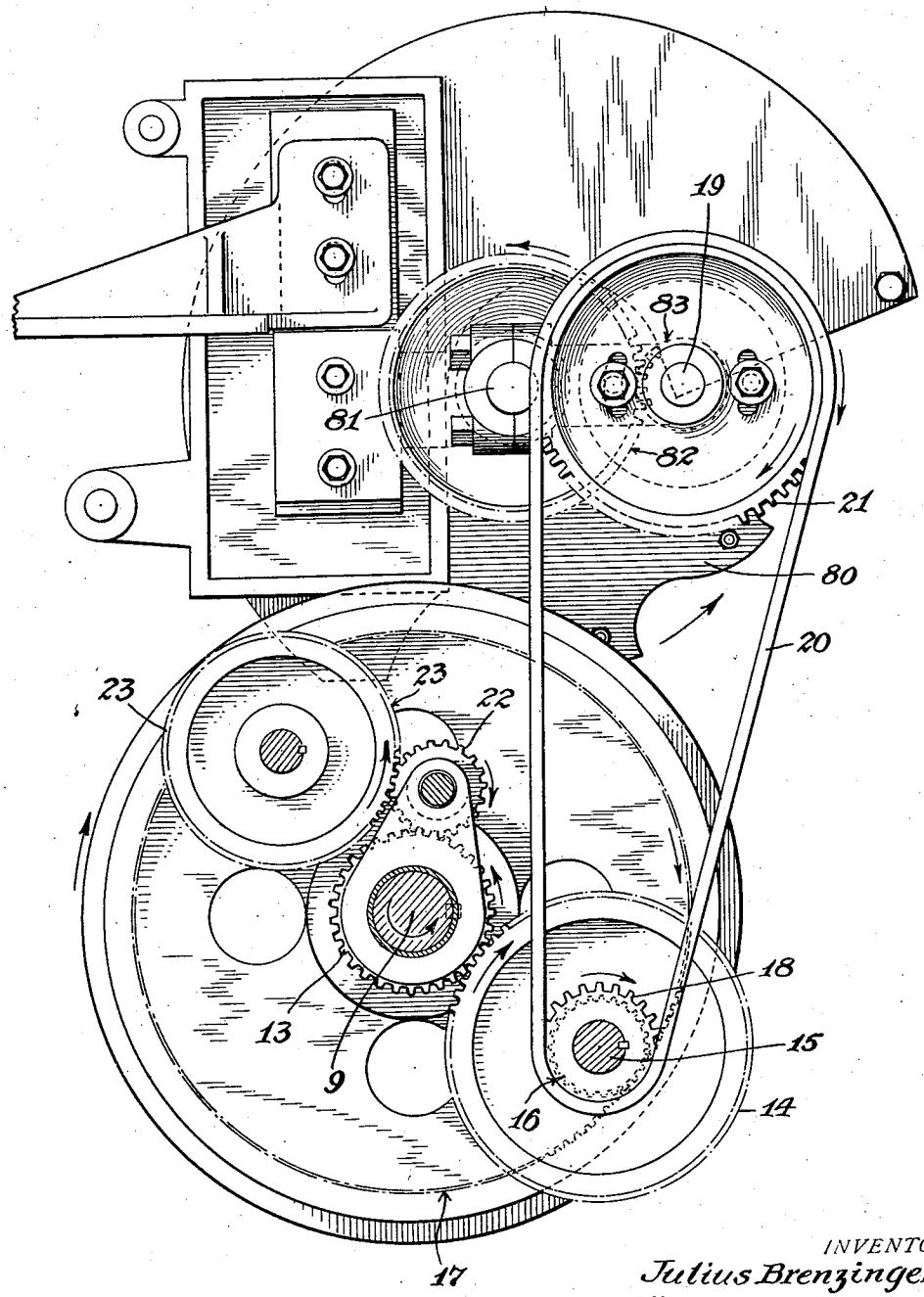
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Fig. 6.



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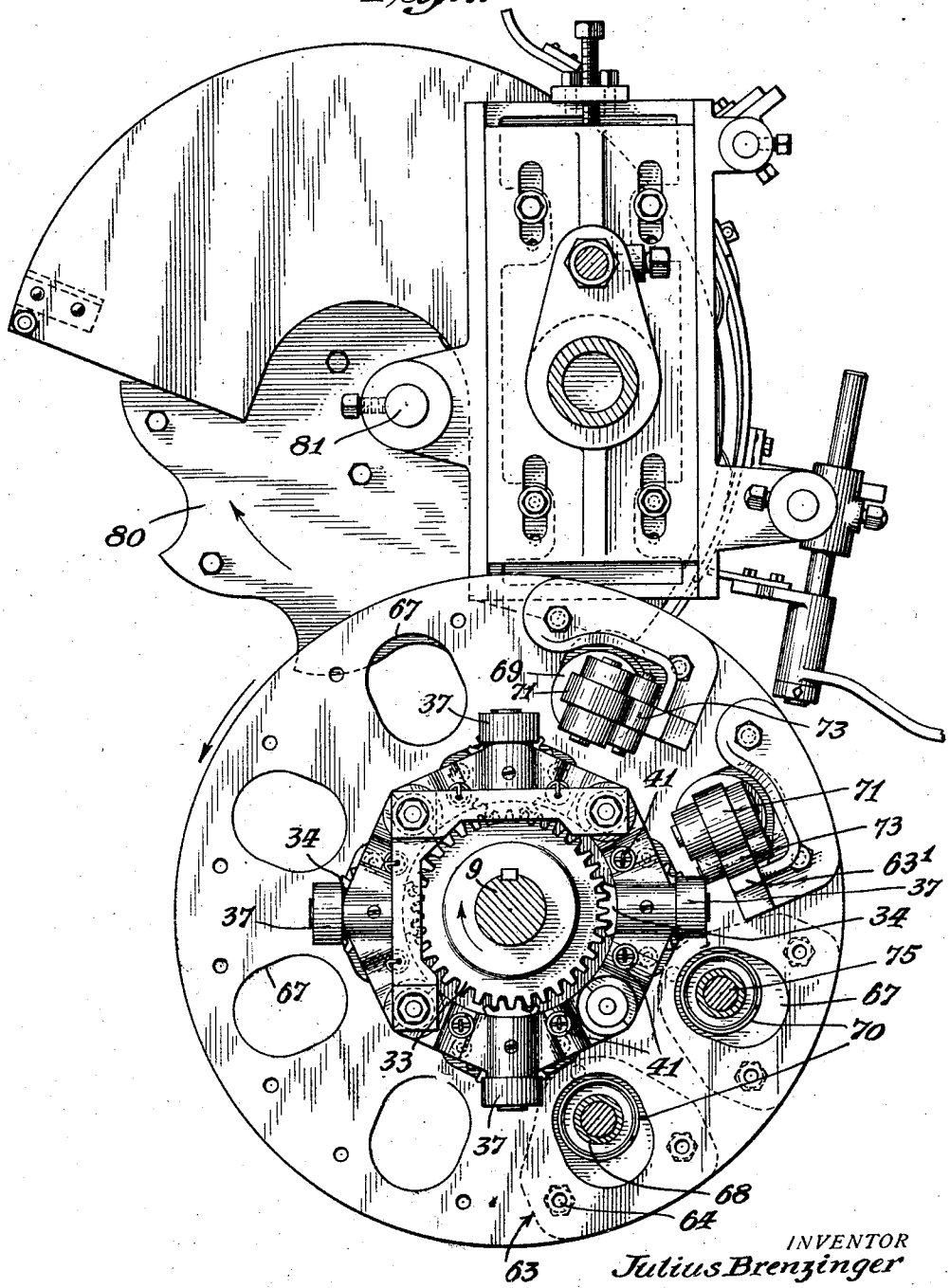
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SEAMING MACHINE

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Fig. 1.



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Fig. 8.

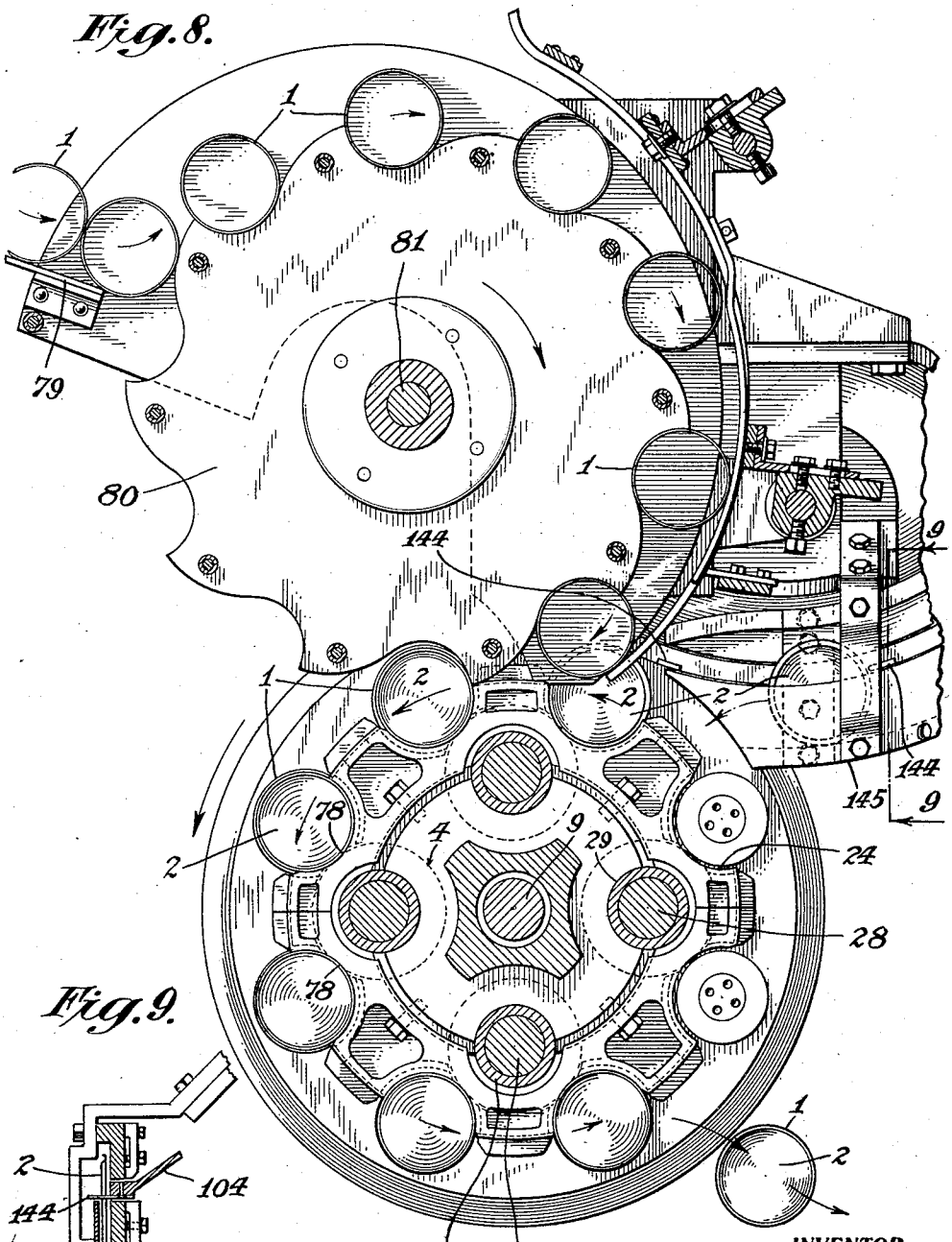


Fig. 9.

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SEAMING MACHINE

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Fig. 10.

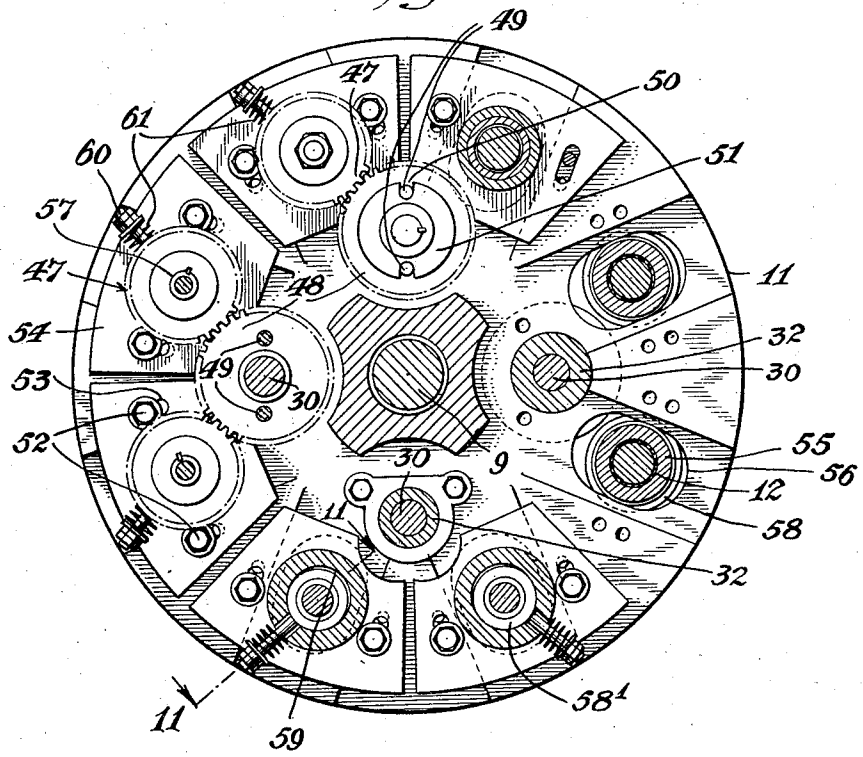
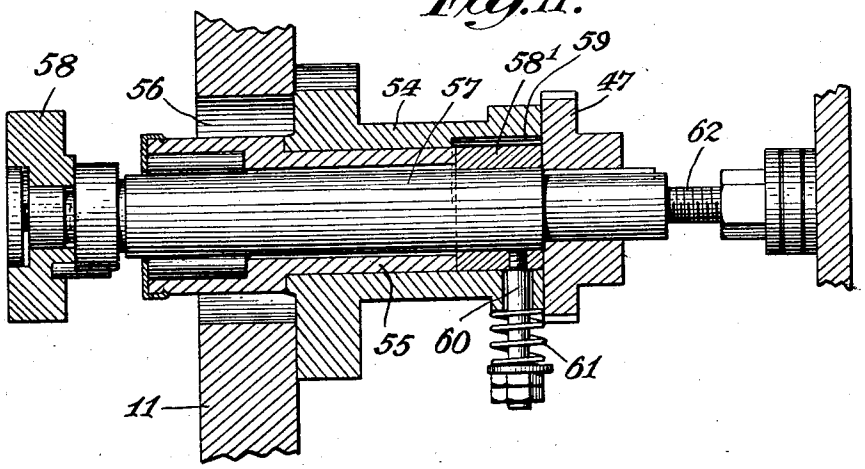


Fig. 11.



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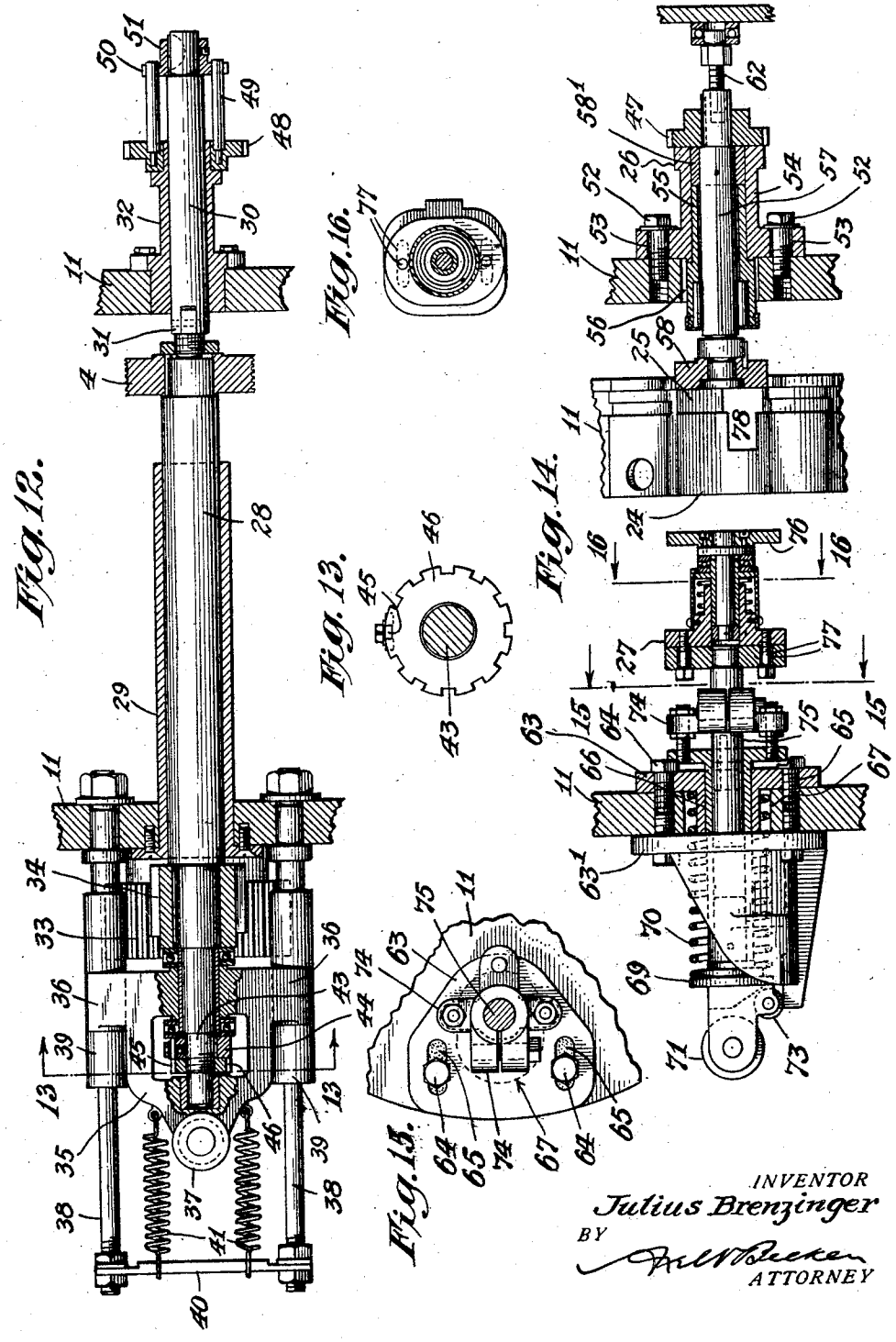
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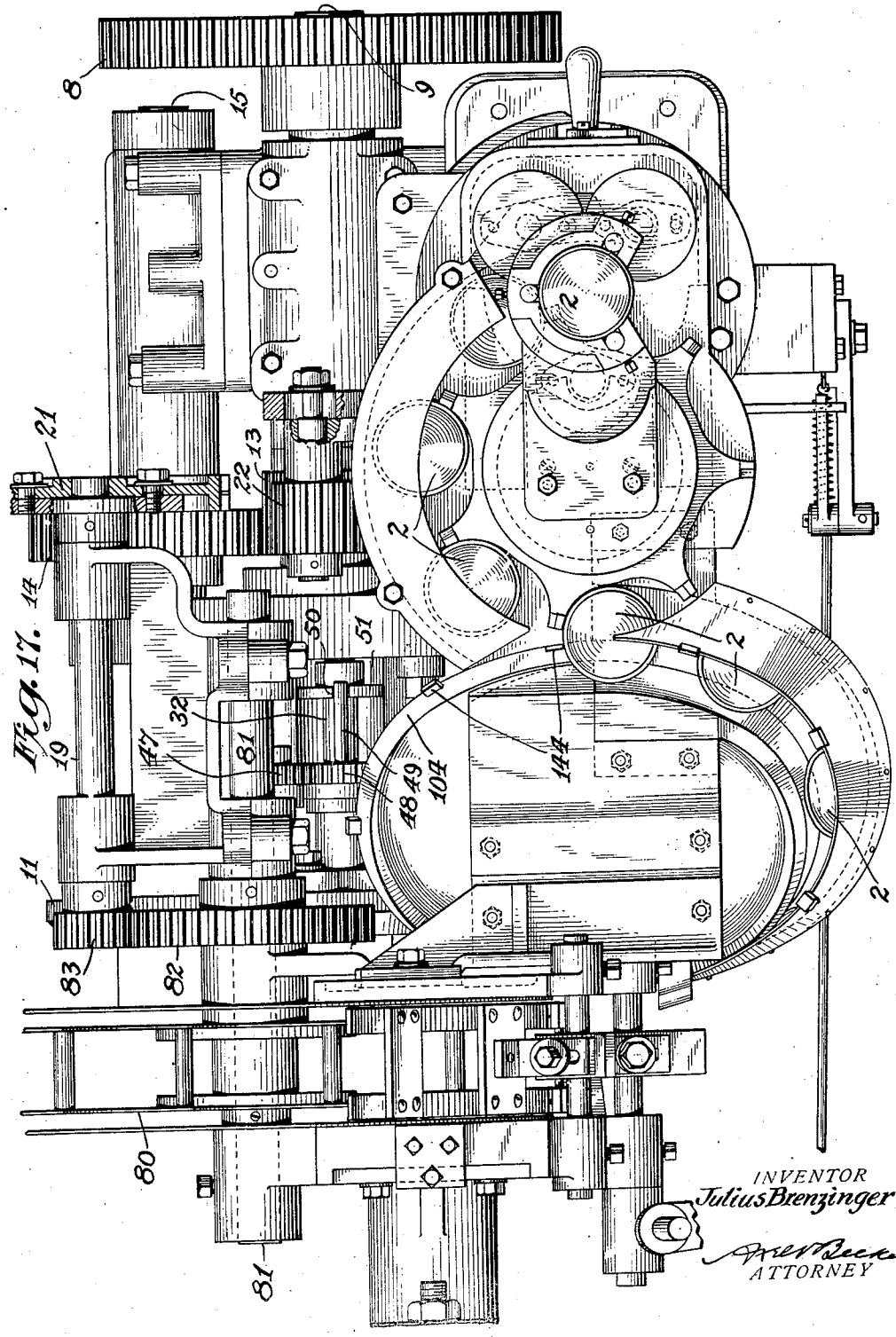


FIG. 17.

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Patented Dec. 28, 1926. 1,612,564

UNITED STATES PATENT OFFICE.

JULIUS BRENZINGER, OF FAIRFIELD, CONNECTICUT, ASSIGNOR TO THE MAX AMS MACHINE COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF NEW YORK.

SEAMING MACHINE.

Application filed October 25, 1923. Serial No. 670,682.

This invention relates generally to seaming machines for uniting containers and covers and has more particularly reference to a machine for acting upon a number of containers and covers at the same time in which is employed a seaming tool having a spiral seaming surface and is an improvement upon Patents Nos. 1,121,894 of Dec. 22, 1914 and 1,400,796 of Dec. 20, 1921.

In the accompanying drawings the invention is shown in a concrete form in which:

Fig. 1 is a front elevation of a machine embodying the invention.

Fig. 2 is an end elevation looking in the direction of arrow 2 of Fig. 1.

Fig. 3 is a central horizontal longitudinal section on the plane of line 3—3 of Fig. 1.

Fig. 4 is a diagrammatic face view of the cam for reciprocating the seaming tools.

Fig. 5 is a development view of the cam shown in Fig. 4.

Fig. 6 is a transverse vertical sectional view on the plane of line 6—6 of Fig. 1.

Fig. 7 is a transverse vertical sectional view on the plane of line 7—7 of Fig. 1.

Fig. 8 is a transverse vertical sectional view on the plane of line 8—8 of Fig. 1.

Fig. 9 is a detail sectional view on the plane of line 9—9 of Fig. 8.

Fig. 10 is a vertical transverse sectional view on the plane of line 10—10 of Fig. 1.

Fig. 11 is a fragmentary sectional view on the plane of line 11—11 of Fig. 10.

Fig. 12 is a side elevation, partly broken away and in section of one of the seaming tools and adjacent elements.

Fig. 13 is a detail cross-sectional view on the plane of line 13—13 of Fig. 12.

Fig. 14 is a view partly in side elevation and partly in section of one of the container chucks and adjacent elements.

Fig. 15 is a cross-sectional view on the plane of line 15—15 of Fig. 14.

Fig. 16 is a cross-sectional view on the plane of line 16—16 of Fig. 14.

Fig. 17 is a top plan view of the cover feed mechanism and adjacent elements looking in the direction of arrow 17 of Fig. 1.

Fig. 18 is a detail view of the seaming means and work-holder showing the seaming means about to begin the seaming operation.

The operation to be performed by the machine of this invention can best be understood by considering Fig. 18 where 1 indicates a container and 2 is a cover or bottom to be seamed to the container. 3 indicates the stationary chuck of a suitable work-holding means and 4 is a spiral seaming element for uniting the cover and container, said seaming element having a continuous spiral groove that gradually becomes wider and shallower so that the general outline of the seaming tool is conical. By rotation of the parts and lengthwise displacement of the container and seaming tool, the bottom and container are united. While to limit all the features of this invention to a machine capable of carrying out this operation is far from the intention, it will, nevertheless, be understood that the machine has been designed more particularly for the purpose of uniting a container and a cover in the manner described.

In accordance with the form of the invention herein disclosed, a plurality of work-holding means are provided on a rotatable turret which latter likewise carries a plurality of seaming tools so that a constant stream of containers and covers may be acted upon, the seaming operation being performed simultaneously on a number of pieces of work.

Referring first to the sheets of drawings containing Figs. 1, 3 and 12, 5 is a power shaft having fast and loose pulleys 6 and provided with a pinion 7 driving spur-gear 8 mounted fast on main shaft 9 carried by suitable bearings 10 and supporting, loosely, a turret 11 mounted on roller bearings 12. Keyed to shaft 9 is a pinion 13 meshing with gear 14 on auxiliary shaft 15 which latter carries a pinion 16 meshing with internal gear 17 on the turret whereby a revolving motion is imparted to said turret. Shaft 15 also carries a sprocket gear 18 that drives shaft 19 (Fig. 6) by means of sprocket chain 20 and sprocket 21. Shaft 19 drives the body infeed mechanism in a manner to be subsequently described. The cover infeed mechanism is also driven from pinion 13 through idler 22 and gear 23 in a way to be described later. The turret (Fig. 8) carries a plurality of body-supporting pockets 24 and a plurality of cover-supporting pock-

ets 25 (Fig. 14) in alinement with each other and with suitable work-holding means consisting here of stationary chuck 26 and movable chuck 27; and, intermediate these pockets and nearer the center of the turret (Figs. 8 and 12) are spindles 28 carrying seaming tools 4. Inasmuch as the several work-holding means are alike as are also the several seaming tools, only one of each will be described. It will be observed, however, that the seaming tools are arranged in a circular group and that the work-holders are likewise arranged in a circular group outside the seaming tools and in staggered relation thereto so that one seaming tool serves for two work-holders.

Referring particularly to Figs. 3 and 12, a flange of turret 11 carries a sleeve 29 in which spindle 28 is slidingly mounted. At the other side of seaming tool 4 is an auxiliary spindle 30 connected to spindle 28, as by coupling 31, and mounted to slide in sleeve 32 carried by another flange of turret 11. Main shaft 9 carries a gear 33 that meshes with a pinion 34 on each spindle 28 whereby, due to a difference in speed of the main shaft and the turret, rotation is imparted to the several spindles and seaming tools. Suitable means are provided for reciprocating the seaming tools and the spindles thereof consisting, in this instance, of the following: Carried at one end of each spindle is a yoke 35 having arcuate bearing members 36 and provided with a cam roll 37. One of the flanges of turret 11 is provided with four rods 38 (Figs. 7 and 12) that carry guide members 39 and that are connected by braces 40. One bearing member 36 of each of two adjacent yokes slides on the same guide member 39 and the two bearing members 36 of each yoke 35 slide on guides 39 of different rods 38. Springs 41, extending between yoke 35 and brace 40, normally urges said yoke to the left, in Fig. 12, and holds cam roller 37 against the cam surface of stationary cam 42 (Fig. 3). It will now be understood that rotation of the main shaft and revolution of the turret causes each seaming tool to be rotated and to be reciprocated. To adjust spindle 28 to take up lost motion, there is keyed to reduced portion 43 (Figs. 12 and 13) a member 44 that is provided with a filling block 45 extending into one of the teeth of tooth member 46 threaded on portion 43.

Each of the plurality of work-holding means is constructed as follows: (Figs. 3, 10, 11, 14, 15 and 16). Chuck 26 is stationary in the sense that it has no longitudinal motion but a rotating motion is imparted to it in the present instance by means of pinion 47 (Figs. 3 and 14) that meshes with a corresponding pinion 48 (Figs. 3 and 12) mounted loosely on sleeve 32, said pinion 48 deriving its motion from spindle 28 by pin and slot connection 49. It will be observed that pins 49 are fast in pinion 48 and are slidingly engaged in slots 50 of head 51 secured to a reduced portion of auxiliary spindle 30 whereby the spindle is free to slide but will, at the same time impart its rotation to gear 48 which does not slide. In its detailed construction, the so-called stationary chuck is as follows: (Figs. 10, 11 and 14). Secured to a flange of turret 11 as by means of bolts 52 passing through slots 53, is a bearing 54 carrying sleeve 55. Sleeve 55 extends into an elongated opening 56 of the turret so as to permit radial adjustment of bearing 54 to thereby make the machine available for different sizes of cans. Seated in sleeve 55 is a spindle 57 provided at one end with chuck head or pedestal 58 and at a point in rear of sleeve 55 with a filling block 58′ that extends into enlarged portion 59 of bearing 54. Filling block 58′ is provided with a stem 60 extending transversely out through bearing 54 and a spring 61 tends to keep filling block 58′ out of the enlarged or eccentric portion 59 of bearing 54. The object of this construction is to permit the spindle to have a slightly yielding or rocking motion when the seaming tool passes over the longitudinal seam of the can to compensate for the extra thickness of metal at that point. 62 is an end thrust bearing against which spindle 57 abuts. The movable chuck 27 is here constructed as follows (Figs. 1, 3, 7, 14, 15 and 16): Carried by turret 11 is bracket 63 adjustably secured in position by means of bolts 64 passing through elongated slots 65. 66 is a sleeve bearing also adjustably secured to turret 11 in a manner similar to that employed in connection with plate 63. Sleeve bearing 66 extends through bracket 63 and through elongated opening 67 in turret 11 so that the center of the movable chuck can be adjusted to correspond to the adjustment of the stationary chuck when working on different sizes of cans. Sleeve 66 is provided at its outer end with a head 69 between which and the turret a spring 70 is interposed, said spring normally urging said sleeve to the left in Fig. 14. The head is provided with a cam roll 71 engaging stationary cam 72 (Figs. 1, 3, 4 and 5) and with a guide roller 73 engaging bracket 63′ which latter is complementary to bracket 63. At its other end said sleeve is provided with a crosshead 74 connected to spindle 75, the latter housed within the sleeve. As a consequence, said spindle follows the reciprocation of the sleeve. Carried by the spindle is a spring seated plunger or chuck head 76. This plunger is adjustable by means of slot and bolt connection 77 (Figs. 14 and 16).

It will now be understood that upon actuation of the parts and can 1 and cover 2 being placed in the turret pockets, the movable

chuck moves toward the right (Figs. 1, 3 and 14) thereby clamping the work and causing it to rotate. Seaming tool 4 also rotates and moves lengthwise in accordance with the lead of the spiral seaming surface thereby uniting the can and bottom. As will be seen from Figs. 8 and 10, the turret has spaces for eight cans but has only four seaming tools, one seaming tool serving for two adjacent work-holders. As will also be seen from Figs. 8 and 14, the turret is provided with openings 78 through which the seaming tool extends. All this, of course, takes place while the turret is revolving so that a number of cans and bottoms are acted upon simultaneously.

The can bodies may be fed by hand but preferably automatic means are provided for feeding the bodies into the turret. In the present instance, these means take the following form (Figs. 1, 2, 6, 7, 8 and 17): Bodies 1 travel down an inclined chute 79 and are received in the pockets of a dial 80 which delivers them to successive pockets of the turret. Dial 80 is mounted on shaft 81, (Figs. 6, 8 and 17) carrying gear 82 which latter meshes with pinion 83 on shaft 19.

The covers or bottoms may be fed into the machine by hand but preferably automatic means are provided for feeding said covers into the pockets of the turret, these means in the present instance taking the following form: Associated with inclined dial 104 are fingers 144 which convey a cover and turn it edgewise into guide 145 (Figs. 8 and 9). From guide 145 the cover passes into groove 25 (Fig. 14) of one of the pockets of the turret where it is then associated with a body in the manner previously described.

The cover-feeding means associated with this machine forms the subject matter of a separate application Serial No. 757,818 filed December 24, 1924.

I claim:

1. A machine of the character set forth comprising: a rotating shaft, a revoluble turret on said shaft, work-holding and seaming mechanism carried by said turret, body infeeding mechanism, cover infeeding mechanism, a train of gears for driving the cover infeeding mechanism from the shaft, transmission mechanism for revolving the turret and the body infeeding mechanism from the shaft independently of the cover infeeding mechanism, and gearing for driving the work-holding and seaming mechanism from said shaft independently of the turret and body infeed drive and of the cover infeeding mechanism drive.

2. A machine of the character described comprising: a main shaft, a turret loosely mounted on said shaft, an internal gear on the turret, a gear on the shaft, transmission means between the two gears, a plurality of work-holders and a plurality of seaming tools carried by the turret, and transmission means between the shaft, the seaming tools and the work-holders to rotate said tools and work-holders.

3. A machine of the character described comprising: a main rotating shaft, a turret loosely mounted on said shaft, transmission means between the shaft and turret to revolve the latter, a plurality of work-holders and a plurality of seaming tools carried by the turret, a gear on the shaft, gears on the seaming tools engaging the shaft gear, and gears between the seaming tools and work-holders.

4. A machine of the character described comprising: a main rotating shaft, a turret loosely mounted on said shaft, transmission means between the shaft and turret to revolve the latter, a plurality of work-holders and a plurality of seaming tools carried by the turret, transmission means between the shaft, the seaming tools and the work-holders to rotate said tools and work-holders, and a cam for effecting lengthwise movement of the seaming tools with respect to the work-holders during the seaming operation.

5. A machine of the character described comprising: a main shaft, a turret loosely mounted on said shaft, an internal gear on the turret, a gear on the shaft, transmission means between the two gears, a plurality of work-holders and a plurality of seaming tools carried by the turret, transmission means between the shaft, the seaming tools and the work-holders to rotate said tools and work-holders, and a cam for effecting lengthwise movement of the seaming tools with respect to the work-holders during the seaming operation.

6. A machine of the character described comprising: a main rotating shaft, a turret loosely mounted on said shaft, transmission means between the shaft and turret to revolve the latter, a plurality of work-holders and a plurality of seaming tools carried by the turret, a gear on the shaft, gears on the seeming tools engaging the shaft gear, gears between the seaming tools and work-holders, and a cam for effecting lengthwise movement of the seaming tools with respect to the work-holders during the seaming operation.

7. A machine of the character described comprising: a main rotating shaft, a turret loosely mounted on said shaft, transmission means between the shaft and turret to revolve the latter, a plurality of work-holders, each consisting of opposed chucks for clamping bodies and covers, carried by the turret, a plurality of seaming tools also carried by the turret, and gearing for rotating the work-holders and seaming tools from the shaft.

8. A machine of the character described

comprising: a main rotating shaft, a turret loosely mounted on said shaft, an internal gear on the turret, a gear on the shaft, transmission means between the two gears, a plurality of work-holders, each consisting of opposed chucks for clamping bodies and covers, carried by the turret, a plurality of seaming tools also carried by the turret, and gearing for rotating the work-holders and seaming tools from the shaft.

9. A machine of the character described comprising: a main rotating shaft, a turret loosely mounted on said shaft, transmission means between the shaft and turret to revolve the latter, a plurality of work-holders, each consisting of opposed chucks for clamping bodies and covers, carried by the turret, a plurality of seaming tools also carried by the turret, a gear on the shaft, gears on the seaming tools engaging the shaft gear, and gears between the seaming tools and work-holders.

10. A machine of the character described comprising: a main rotating shaft, a turret loosely mounted on said shaft, transmission means between the shaft and turret to revolve the latter, a plurality of work-holders, each consisting of opposed chucks for clamping bodies and covers, carried by the turret, a plurality of seaming tools also carried by the turret, gearing for rotating the work-holders and seaming tools from the shaft, a cam for opening and closing the chucks of the work-holders, and a cam for effecting lengthwise movement of the seaming tools with respect to the work-holders during the seaming operation.

11. A machine of the character described comprising: a main rotating shaft, a turret loosely mounted on said shaft, an internal gear on the turret, a gear on the shaft, transmission means between the two gears, a plurality of work-holders, each consisting of opposed chucks for clamping bodies and covers, carried by the turret, a plurality of seaming tools also carried by the turret, gearing for rotating the work-holders and seaming tools from the shaft, a cam for opening and closing the chucks of the work-holders, and a cam for effecting lengthwise movement of the seaming tools with respect to the work-holders during the seaming operation.

12. A machine of the character described comprising: a main rotating shaft, a turret loosely mounted on said shaft, a transmission means between the shaft and turret to revolve the latter, a plurality of work-holders, each consisting of opposed chucks for clamping bodies and covers, carried by the turret, a plurality of seaming tools also carried by the turret, a gear on the shaft, gears on the seaming tools engaging the shaft gear, gears between the seaming tools and work-holders, a cam for opening and closing the chucks of the work-holders, and a cam for effecting lengthwise movement of the seaming tools with respect to the work-holders during the seaming operation.

13. In a machine of the character set forth, a work-holder consisting of opposed chucks for clamping a body and cover, a seaming tool spindle, a seaming tool carried thereby, means for opening and closing the chucks of the work-holder, intermeshing gears connected to the work-holder and spindle for driving one from the other, and means for effecting a lengthwise movement of the spindle and work-holder, one with relation to the other during the seaming operation.

14. In a machine of the character set forth, a work-holder consisting of opposed chucks for clamping a body and cover, a seaming tool spindle, a seaming tool carried thereby, means for opening and closing the chucks of the work-holder, intermeshing gears connected to the work-holder and spindle for driving one from the other, and means for effecting a lengthwise movement of the spindle with relation to the work-holder during the seaming operation.

15. In a machine of the character set forth, a work-holder consisting of opposed chucks for clamping a body and cover, one of said chucks being stationary in a lengthwise direction and the other being lengthwise movable, means for effecting lengthwise movement of the movable chuck, a seaming tool spindle extending parallel to the work-holder, a seaming tool carried thereby, means for effecting lengthwise movement of the spindle, a stationary bearing through which said spindle passes, a gear on said bearing, means rotatingly connecting said gear to the spindle notwithstanding the sliding movement of the latter, and a gear on the stationary chuck meshing with the gear on the stationary bearing.

16. In a machine of the character set forth: a sleeve bearing, another bearing, a spindle extending therethrough, a seaming tool on said spindle intermediate the bearings, means for reciprocating the spindle in the bearings, a gear on the second bearing, and means rotatively connecting the gear on the second bearing with the spindle notwithstanding the sliding movement of the latter.

17. In a machine of the character set forth: a sleeve bearing, another bearing, a spindle extending therethrough, a seaming tool on said spindle intermediate the bearings, a yoke carried by the spindle, a guide on which the yoke slides, a cam for acting against the yoke, means for rotating the spindle in the yoke, a gear on the second bearing, and means for rotatively connecting the gear on the second bearing with the spindle notwithstanding the sliding movement of the latter.

18. In a machine of the character set forth: a plurality of seaming tool spindles mounted to slide, a yoke carried by each seaming tool spindle, a plurality of guide rods, a yoke carried by each spindle, two slides on each yoke, each slide engaging two guide rods.

19. In a machine of the character set forth: a plurality of seaming tools arranged in a circular group, and a plurality of work-holders, twice the number of the seaming tools, also arranged in a circular group surrounding the seaming tool group and so spaced as to be staggered with respect to the tools, each seaming tool engaging the work of two work-holders.

20. In a machine of the character set forth: a plurality of seaming tools arranged in a circular group, a plurality of work-holders, twice the number of the seaming tools, also arranged in a circular group surrounding the seaming tool group and so spaced as to be staggered with respect to the tools, each seaming tool engaging the work of two work-holders, a revoluble turret carrying the seaming tools and work-holders, a cradle having a number of supports equal to the number of work-holders, and means for feeding bodies and covers to said cradle.

21. In a machine of the character set forth: a plurality of seaming tools arranged in a circular group, a plurality of work-holders, twice in number of the seaming tools, also arranged in a circular group surrounding the seaming tool group and so spaced as to be staggered with respect to the tools, each seaming tool engaging the work of two work-holders, a revoluble turret carrying the seaming tools and work-holders, and means for feeding bodies and covers to said work-holders.

22. In a machine of the character set forth: a rotating shaft, a revoluble turret on the shaft, a plurality of seaming tools on the turret and arranged in a circular group, a plurality of work-holders on the turret also arranged in a circular group but surrounding the seaming tools, a gear on the shaft, gears on the seaming tools meshing with the gear on the shaft, and intermeshing gearing between the seaming tools and the work-holders.

23. In a machine of the character set forth: a rotating shaft, a revoluble turret on the shaft, a plurality of seaming tools on the turret and arranged in a circular group, a plurality of work-holders on the turret also arranged in a circular group but surrounding the seaming tools, a gear on the shaft, gears on the seaming tools meshing with the gear on the shaft, intermeshing gearing between the seaming tools and the work-holders, and means for reciprocating the seaming tools with respect to the work-holders.

24. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle.

25. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, and means for adjusting the chucks of the work-holders toward and away from the cradle pockets.

26. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, and means for feeding bodies and covers to the cradle.

27. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, means for adjusting the chucks of the work-holders toward and away from the cradle pockets, and means for feeding bodies and covers to the cradle.

28. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle,

a rotating shaft on which the revoluble turret is mounted, a gear on the shaft for rotating the seaming coils, and means for rotating the work-holders from the seaming tools.

29. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, means for adjusting the chucks of the work-holders toward and away from the cradle pockets, a rotating shaft on which the revoluble turret is mounted, a gear on the shaft for rotating the seaming tools, and means for rotating the work-holders from the seaming tools.

30. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the the plane of the cradle, means for feeding bodies and covers to the cradle, a rotating shaft on which the revoluble turret is mounted, a gear on the shaft for rotating the seaming tools, and means for rotating the work-holders from the seaming tools.

31. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, means for adjusting the chucks of the work-holders toward and away from the cradle pockets, means for feeding bodies and covers to the cradle, a rotating shaft on which the revoluble turret is mounted, a gear on the shaft for rotating the seaming tools, and means for rotating the work-holders from the seaming tools.

32. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, and means for reciprocating the seaming tools.

33. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, means for adjusting the chucks of the work-holders toward and away from the cradle pockets, and means for reciprocating the seaming tools.

34. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, means for feeding bodies and covers to the cradle, and means for reciprocating the seaming tools.

35. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, means for adjusting the chucks of the work-holders toward and away from the cradle pockets, means for feeding bodies and covers to the cradle, and means for reciprocating the seaming tools.

36. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, a rotating shaft on which the revoluble turret is mounted, a gear on the shaft for rotating the seaming tools, means for rotating

the work-holders from the seaming tools, and means for reciprocating the seaming tools.

37. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, means for adjusting the chucks of the work-holders toward and away from the cradle pockets, a rotating shaft on which the revoluble turret is mounted, a gear on the shaft for rotating the seaming tools, means for rotating the work-holders from the seaming tools, and means for reciprocating the seaming tools.

38. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, means for feeding bodies and covers to the cradle, a rotating shaft on which the revoluble turret is mounted, a gear on the shaft for rotating the seaming tools, means for rotating the work-holders from the seaming tools, and means for reciprocating the seaming tools.

39. In a machine of the character set forth: a revoluble turret, a cradle having a plurality of pockets to receive bodies and covers, a plurality of seaming tools carried by the turret and arranged in a circular group inside the plane of the cradle, a plurality of work-holders, each consisting of a relatively stationary and movable chuck to clamp the bodies and covers carried by the cradle, also arranged in a circular group on the turret but outside the plane of the cradle, means for adjusting the chucks of the work-holders toward and away from the cradle pockets, means for feeding bodies and covers to the cradle, a rotating shaft on which the revoluble turret is mounted, a gear on the shaft for rotating the seaming tools, means for rotating the work-holders from the seaming tools, and means for reciprocating the seaming tools.

Signed at Bridgeport in the county of Fairfield and State of Connecticut this 17 day of October, 1923.

JULIUS BRENZINGER.