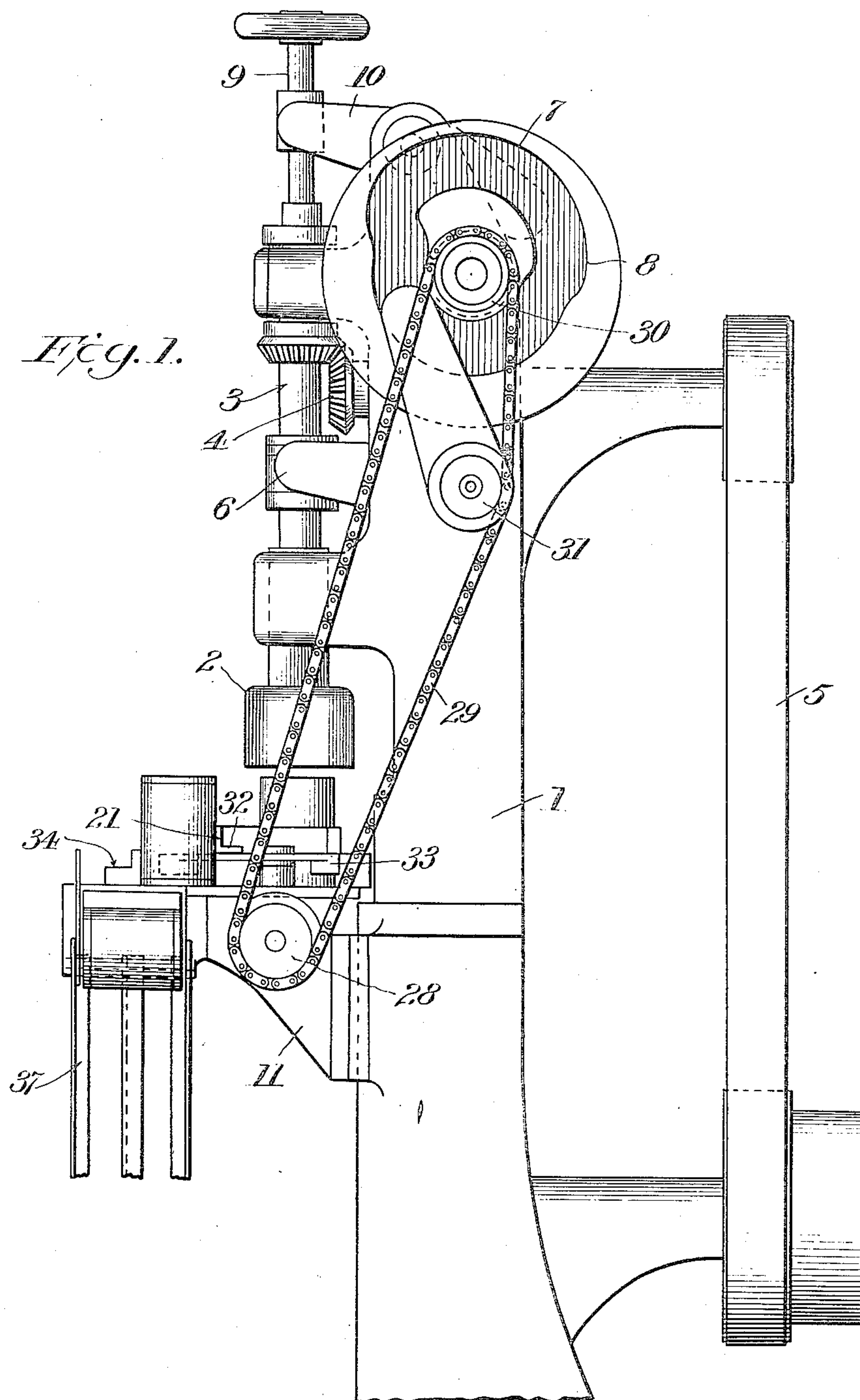


L. C. KRUMMEL & J. C. TALIAFERRO.
 DEVICE FOR FEEDING CANS TO OPERATING MECHANISMS.
 APPLICATION FILED DEC. 10, 1908.

931,434.

Patented Aug. 17, 1909.

3 SHEETS—SHEET 1.



Inventors

Witnesses

C. H. Walker
Mary W. Hammer

By

Louis C. Krummel
John C. Taliaferro
Sturtevant Mason

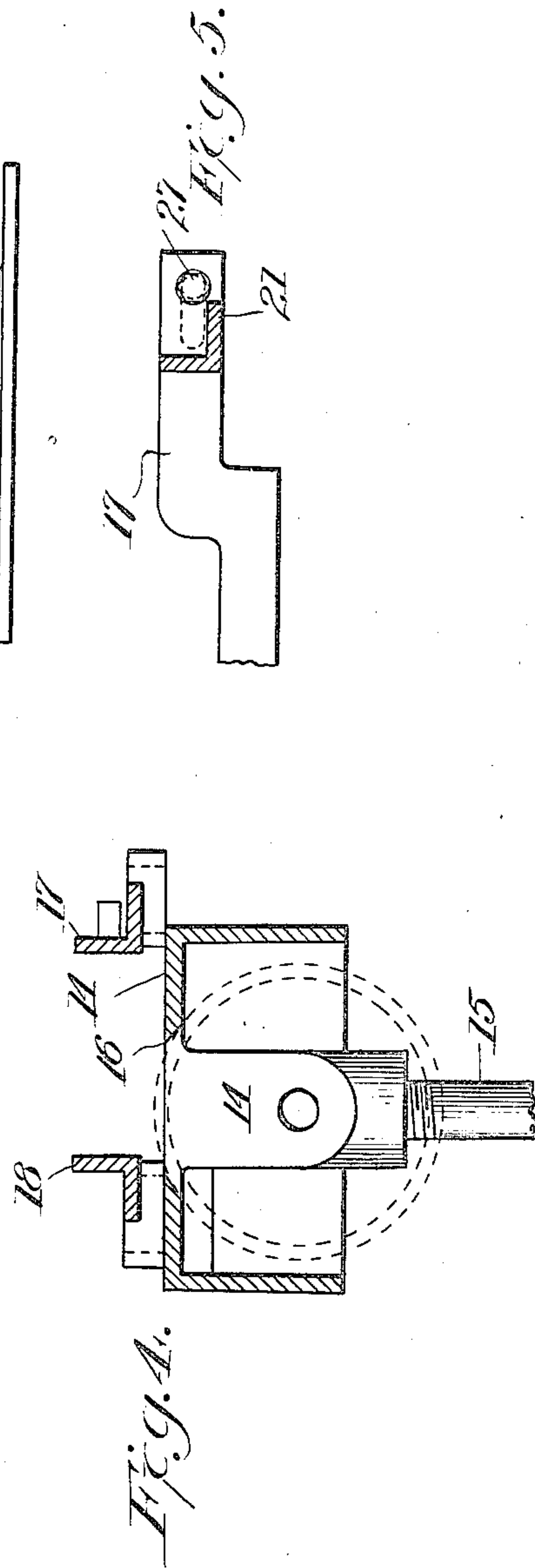
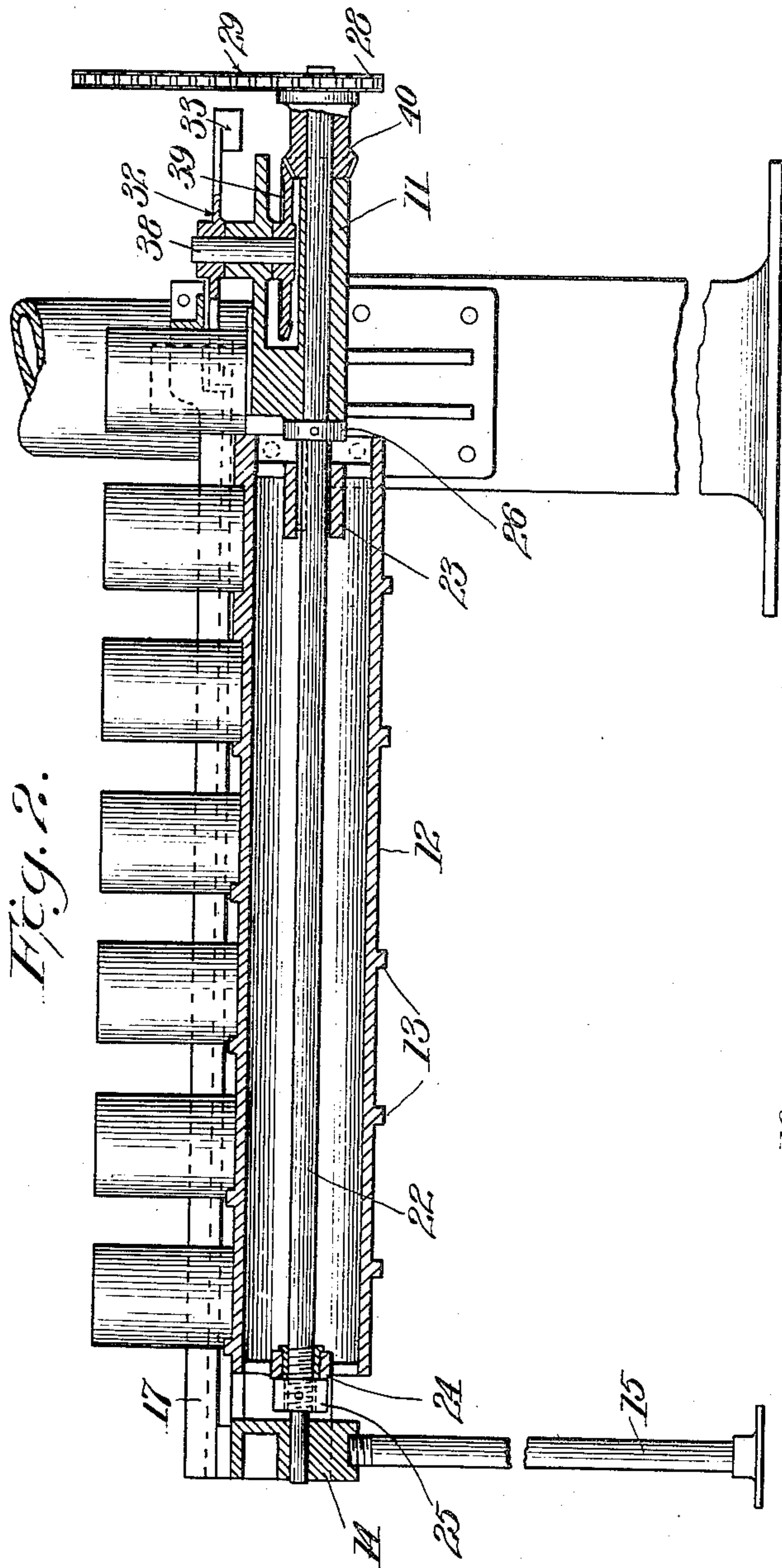
Attorneys

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Witnesses
C. H. Walker.
Mary W. Hammer.

By

Louis C. Krummel
John C. Taliaferro
Sturtevant & Mason
 Attorneys

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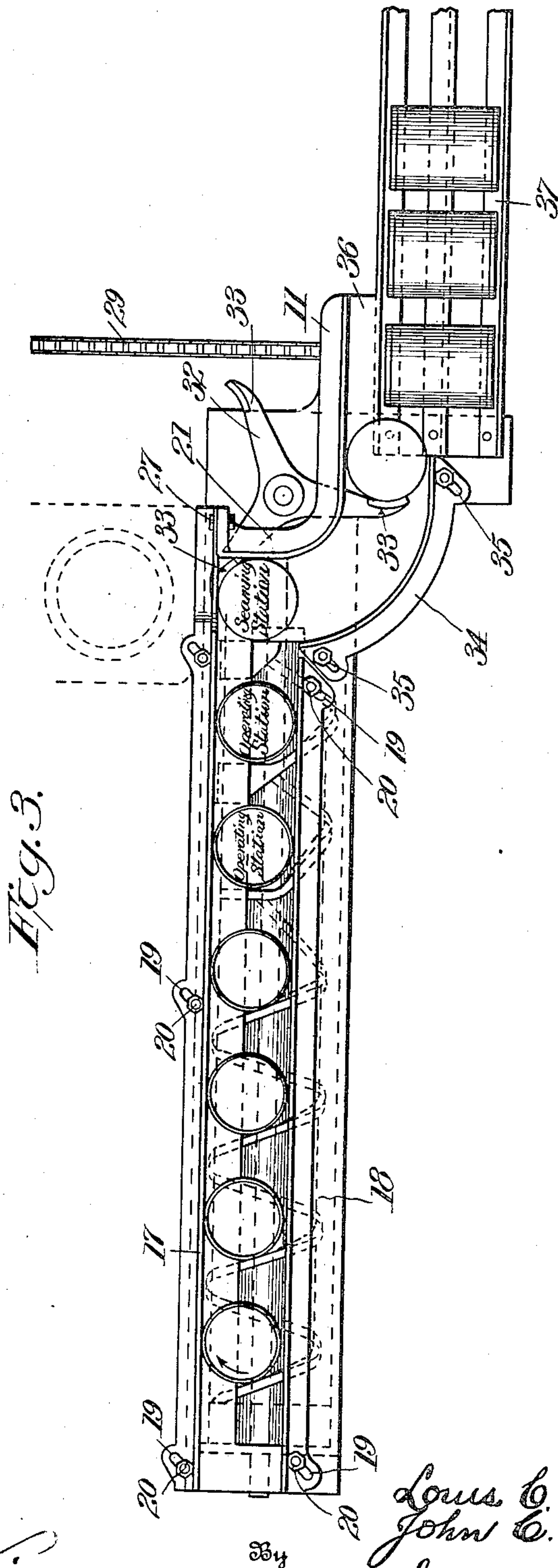


Fig. 3.

Witnesses
C. H. Walker
Mary W. Hammer

Inventor
Louis C. Krummel
John C. Taliaferro
Sturtevant Mason
 Attorneys

UNITED STATES PATENT OFFICE.

LOUIS C. KRUMMEL, OF CLINTON, CONNECTICUT, AND JOHN C. TALIAFERRO, OF BALTIMORE, MARYLAND.

DEVICE FOR FEEDING CANS TO OPERATING MECHANISMS.

No. 931,434.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed December 10, 1908. Serial No. 466,833.

To all whom it may concern:

Be it known that we, LOUIS C. KRUMMEL and JOHN C. TALIAFERRO, citizens of the United States, residing at Clinton, in the county of Middlesex, State of Connecticut, and Baltimore, Maryland, respectively, have invented certain new and useful Improvements in Devices for Feeding Cans to an Operating Mechanism, of which the following is a description, reference being had to the accompanying drawing, and to the figures of reference marked thereon.

Our invention relates to new and useful improvements in devices for feeding receptacles, such as cans or the like, to an operating station or stations, where the receptacles may be treated in any desired manner, such as, for example, having a head placed thereon, or the head seamed to the body of the receptacle, or any other similar operation.

An object of the invention is to provide a feeding mechanism which will be durable in construction, efficient in operation and of comparatively low cost to build.

A further object of the invention is to provide a feeding mechanism which is positive in its feeding movements, and in which the movements of the receptacle may be retarded or given a dwell, without stopping the movements of the feeding mechanism.

A further object of the invention is to provide a positive mechanism for feeding and delivering receptacles to an operating station, which feeding and delivering means is adjustable for different sized receptacles.

A further object of the invention is to provide a feeding device which is driven at a uniform rate of movement, and which is provided with means for engaging and moving the receptacles positively at varying speeds.

These and other objects will in part be obvious, and will in part be hereinafter more fully described.

In the drawings, which show by way of illustration one embodiment of the invention, Figure 1 is a side view of a double seaming machine, showing in end view my improved feeding mechanism; Fig. 2 is a front view partly in section, of the same; Fig. 3 is a top plan view of the feeding mechanism, also showing the devices for conveying the cans away from the double-seaming machine; Fig. 4 is a detail sec-

tional view through the support for the cans; and Fig. 5 is a detail view showing the adjustment of the guide rail for holding the can at the seaming station.

The double-seaming machine as herein shown, comprises an upright standard 1, in which is mounted a rotating double-seamer 2. Said rotating double-seamer includes a rotating spindle 3, which is operated by a bevel gear connection with a shaft 4, driven by a belt 5 from the main shaft of the machine.

The spindle 3 may be moved up and down to bring the seaming head into operative relation with the can by means of a rock lever 6, which is pivoted to the standard 1, and operated by a cam 7 carried by a cross shaft 8, operated by any suitable connection with the shaft 4.

The seaming machine may also be provided with a center rod 9, which is moved up and down by means of a rock lever 10 operated by a cam on the shaft 8. The double-seaming machine herein shown, however, is merely shown for the purpose of illustration, and forms no part whatever of the present invention. In fact, any other form of double-seaming machine may be substituted for that herein shown. We prefer, however, to use a double-seaming machine which operates upon the can while it is held stationary upon a supporting bed, and consequently the seaming head must, therefore, be moved down into operative relation with the can.

The standard 1 is provided with an outwardly projecting bracket 11, on which the can rests during the seaming operation.

Our invention relates particularly to the feeding device for feeding the cans to the double-seaming machine, or what we term herein the seaming station. Said feeding device, as herein illustrated, consists of a drum 12, which may be a hollow cast metal drum, or which may be made in any other suitable way. The drum is provided with a thread 13, which is wound about said drum in a manner so as to secure the desired feeding action. Said thread is secured in any desired way to the drum, and may be cast thereon.

Coöperating with the drum is a support 14, on which the receptacles rest, and along which they may slide. The support 14 is rigidly attached to the bracket 11. As a

supplemental means for supporting the outer end of the support for the can, we have provided a standard 15, which is threaded into the outer end of the support. The support 14 is slotted centrally as at 16, so that the thread on the feeding drum 12 may project above the surface of the support 14, (see Figs. 2 and 4). We have also provided the support 14 with an adjustable guide rail 17, which engages the side of the receptacle and a similar guide rail 18 for engaging the other side of the receptacle. These guide rails are secured to the support 14 by the slotted ears 19, through which suitable clamping bolts 20 are passed. By loosening the bolts 20, the guide rails 17 and 18 may be adjusted toward and from each other, or relative to the slot in the support 14, as desired.

When the receptacles are placed on the support 14, the thread by the rotation of the drum 12, will be brought into contact with the receptacles and gradually push the same along the support 14. The speed of movement of the receptacles along the support 14 for any given rate of movement of the drum depends, of course, upon the pitch of the thread wound on said drum. By varying the pitch of the thread, we are able to control the speed of the cans or receptacles, so that they may be moved rapidly at times, and then more slowly, or if the thread is laid in a plane at right angles to the axis of the drum, the receptacle will be brought to a standstill for a given period of time.

The thread, of course, may be wound upon the drum with no pitch for a greater portion of its circumference, after which it may be given a pitch, so as to carry the can or receptacle along the support. The thread at the forward end of the drum is arranged in a plane at right angles to the axis of the drum for a certain portion of the circumference of the drum, so that when the can or receptacle is brought underneath the seaming head, this portion of the thread on the drum which has no pitch will serve to hold the can or receptacle properly positioned underneath the seaming head.

A guide rail 21 is provided at the end of the feeding drum, so that the cans or receptacles are brought against the guiding rail 21 when properly positioned at the seaming station. It will be seen, therefore, that the thread on the feed drum, the guide rail 17 in the rear of the can or receptacle and the guide rail 21 serve to properly position the cans at the seaming station. The rotation of the drum, which is in the direction of the arrow, as shown in Fig. 3, will also serve to hold the can back against the guide rail 17.

When bringing the cans or receptacles to a seaming station, it is often desirable to perform other operations upon the can, such as placing the cover on the can or receptacle,

which may be done by hand or automatically, flattening down any irregularity in the body flange, or clenching the cover to the body, so that it will not shift before it reaches the seaming station.

We have shown diagrammatically in Fig. 3, two operating stations in addition to the seaming station, and the thread on the drum, as herein illustrated, is so wound as to bring the cans or receptacles to a standstill at each of these operating stations. This bringing of the can to a standstill allows, of course, the operation which is to be performed thereon to be much more easily and quickly accomplished.

While we have shown herein two operating stations, it will be obvious that any number of operating stations may be provided, and that the thread on the drum may be so constructed as to bring the can to a standstill, and to hold it at its operating station for a given period of time. Then again the thread on the drum may be so constructed as to move the cans more rapidly over certain parts of the support, and as it approaches the seaming station, move the cans much more slowly, keeping the same separated by a predetermined distance, so that one receptacle cannot knock the cover off another receptacle, and cannot be fed into the seaming station until the can already at the seaming station has been headed and removed therefrom.

As a means for driving the drum, we have shown herein a shaft 22, which is mounted at one end in the support 14, and at its other end in the bracket 11, carried by the standard 1 of the double-seaming machine. The drum has a central collar 23, which is splined on to the shaft 22. At its other end, a central collar 24 formed in the drum 12 engages a bushing on the shaft 22. An adjustable nut 25 is threaded on to the shaft 22, and serves as a means for adjusting the drum lengthwise of the shaft 22. A stop collar 26 secured to the shaft 22 serves to prevent any longitudinal movement of said shaft. The object of this adjustment of the drum lengthwise of its operating shaft is to provide for receptacles of different sizes. The thread at the end of the drum must be so located relative to the center of the seaming station as to feed the can or receptacle centrally underneath said seaming station. If the receptacles are smaller, then, of course, the drum must be adjusted so as to bring the thread at the end thereof closer to the center of the seaming head. It is also necessary when adjusting the machine for different sized cans, to adjust the guide rails 17 and 18. This may be accomplished as above noted, by loosening the securing bolts 20.

It will be noted that the slots in the ears 19 are arranged at an angle of 45° with the front face of the guiding rail. The guiding

5 rail 21 is bolted to the guiding rail 17 by a suitable bolt 27. When the guide rail 17 is adjusted, the guide rail 21 will be carried thereby, and owing to the arrangement of the slots in the ears 19, the guide rail 21 will be properly located, so as to center the receptacle under the seaming head. The guide rail 21, however, may be separately adjusted by means of the bolt 27, which passes through a slot in the rail 17, as shown in dotted lines in Fig. 5.

10 The shaft 22 which drives the drum 12, as herein shown, is given a continuous movement by means of a sprocket wheel 28, and chain 29, which engages a sprocket wheel 30 of the same diameter on the shaft 8. The chain 29 also runs over an idle sprocket wheel 31 mounted on the frame of the double seamer. The double seamer is given one complete operation for each rotation of the shaft 8, and, therefore, the feed drum will likewise be given one rotation for each operation of the seaming head. This timing of the parts, together with the positive feed of the cans by the thread on the drum, causes a proper timing in the delivery of the cans to the seaming head and the operation of the seaming head. That is to say, the cans must be delivered underneath the seaming head when said seaming head is raised from its operative position relative to the cans or receptacles. This timing of the parts after having once been secured, will always be constant.

35 Instead of driving the drum continuously, as herein shown, it is obvious that said drum may be driven intermittently, if desired, and if the drum were given an intermittent motion, the pitch of the thread which feeds the cans or receptacles could be varied in any way, so as to secure the desired movement of the cans or receptacles, together with the dwell in the said movement.

40 As a means for removing the cans from the seaming station, after they have been operated upon, we have provided a continuously revolving spider wheel 32. Said spider wheel has preferably three arms 33, which are brought one after the other, into engagement with the can or receptacle, and said can is pushed or swept away from the seaming station.

55 The guide rail 17 at its end is spaced from the table, as shown in Fig. 5, so that the arms of the spider 32 may move underneath said guiding rail 17 and engage the can or receptacle near the bottom thereof. The guide rail 21 is also raised from the table, so that the arms 33 of the spider move underneath the same. A guiding rail 34 is adjustably secured to the table or bracket 11, by means of slotted ears 35, and suitable bolts. Said guide rail 34 is curved, as herein shown, so that the cans or receptacles may be held in contact with the arms of the spi-

der as they are conveyed away from the seaming station. The bracket or support 11 on which the cans rest, is cut away, so as to form a narrow ledge or shelf 36. Said shelf is narrower in diameter than the smallest can or receptacle to be operated upon, so that when said can is moved on to said shelf by the arms of the spider wheel, they will naturally tip over and fall into a runway 37, which is secured at one end to the bracket 11, and operates to convey the cans away from the seaming station.

As a means for operating the spider wheel 32, we have mounted said spider wheel on a short shaft 38, which carries a bevel gear wheel 39 at its lower end. Said bevel gear wheel 39 engages a bevel gear wheel 40, splined to the shaft 22. The gear wheels 39 and 40 are so constructed as to give the spider one complete rotation to every three rotations of the shaft 22, so that one arm after the other will engage a can or receptacle, and carry the same away from the seaming station.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. The combination of a support along which receptacles may be conveyed, of continuously operating means for engaging and positively moving said receptacles on said support, and for positively holding said receptacles stationary at predetermined times.

2. In a receptacle closing apparatus, a support along which are located a plurality of operating stations, continuously operating means for engaging and positively moving said receptacles on said support and for holding said receptacles stationary at the operating stations.

3. The combination of a feeding member and means for giving the same a uniform movement, said feeding member having means for simultaneously engaging and moving receptacles at varying speeds.

4. The combination of a feeding member and mechanism for giving the same a uniform movement, said feeding member having means for positively moving receptacles and for preventing the movement of said receptacles at several predetermined places.

5. A feeding device for receptacles having in combination a support, means for feeding receptacles along said support including a drum having a thread wound thereon irregularly intermediate its ends, and means for operating said drum.

6. The combination of a seaming station, a support along which receptacles may be fed to said seaming station, means for feeding said receptacles along said support including a drum having a feeding thread thereon, and means cooperating with the thread on said drum for gaging said receptacles under the seaming head.

7. The combination of a seaming station, a support along which receptacles may be fed to said seaming station; means for feeding said receptacles along said support including a drum having a feeding thread thereon, and means cooperating with the thread on said drum for gaging said receptacles under the seaming head, and means for discharging the receptacles from said seaming head.

8. The combination of an operating station, means for feeding receptacles to said operating station including a drum on which a thread is irregularly wound, so that a portion of said thread has a constant pitch and a portion thereof intermediate its ends has no pitch, and means for discharging the finished receptacle from the operating station.

9. The combination of an operating station, means for feeding receptacles to said operating station, including a drum on which a thread is wound, a support cooperating with said drum, said support having a slot therein through which said thread projects, whereby said receptacles may be engaged and slid along said support.

10. The combination of an operating station, of means for feeding receptacles to said operating station, including a drum on which a thread is wound, said thread at the end of said drum being so constructed as to positively hold said receptacles at the operating station.

11. The combination of an operating station, of means for feeding receptacles to said operating station, including a drum on which a thread is wound, said thread at the end of said drum being so constructed, as to positively hold said receptacles at the operating station, and means for discharging the receptacles from said operating station.

12. The combination with an operating station, of means for feeding receptacles to said operating station, including a drum having a thread wound thereon a support cooperating with said drum along which said receptacles are slid by the thread on the drum, the thread adjacent the operating station having no pitch whereby the receptacle is held stationary for a certain period of time, and means for adjusting the drum longitudinally whereby receptacles of different sizes may be centered at the operating station.

13. The combination with an operating station, of means for feeding receptacles to said operating station, including a drum, having a thread wound thereon, a support cooperating with said drum along which said receptacles are slid by the thread on the drum, the thread adjacent the operating station having no pitch whereby the receptacle is held stationary for a certain period of time, and means for adjusting the drum lon-

gitudinally whereby receptacles of different sizes may be centered at the operating station, guide rails cooperating with said support, and means whereby said guide rails may be adjusted for different size receptacles.

14. The combination with a seaming station, of means for feeding receptacles to said seaming station, including a drum having a thread wound thereon, said thread at the end of the drum having no pitch whereby the receptacles are held at the seaming station stationary during the seaming operation, guide rails cooperating with said drum for holding the receptacles at said station.

15. The combination with a seaming station, of means for feeding receptacles to said seaming station, including a drum having a thread wound thereon, said thread at the end of the drum having no pitch whereby the receptacles are held at the seaming station stationary during the seaming operation, guide rails cooperating with said drum for holding the receptacles at said station, and means whereby said drum and said guide rails may be adjusted for different sized receptacles.

16. The combination with a seaming station, of means for feeding receptacles to said seaming station, including a drum having a thread wound thereon, said thread at the end of the drum having no pitch whereby the receptacles are held at the seaming station stationary during the seaming operation, guide rails cooperating with said drum for holding the receptacles at said station, and means for discharging the receptacles from said operating station.

17. The combination of a plurality of operating stations, of means for feeding receptacles from one station to another including a drum having a thread irregularly wound thereon so that a portion of said thread intermediate its ends has no pitch, whereby said receptacles are held stationary at the different operating stations for a predetermined period.

18. The combination of a plurality of operating stations, of means for feeding receptacles from one station to another including a drum having a thread irregularly wound thereon, whereby said receptacles are held stationary at the different operating stations for a predetermined period, means for giving said drum a continuous rotation, and means whereby said drum may be adjusted longitudinally, so as to properly center receptacles of different sizes at the operating stations.

19. The combination of a seaming station, of means for feeding receptacles to said seaming station, including a continuously rotating drum having a thread wound thereon, of means for discharging the receptacles from said seaming station, including a rotating spider having projecting arms and means for rotating an arm of said spider

across the seaming station, for each revolution of the feeding drum.

20. The combination of a seaming station, of means for feeding receptacles to said seaming station, means for discharging receptacles from said seaming station, including a rotating spider, having arms adapted to rotate across the seaming station.

21. The combination of a seaming head, of means for operating the same, of a stationary table on which the receptacles rest during the seaming operation, means for engaging and moving the receptacles from said seaming head, guide rails for guiding said receptacles, a run way for conveying the receptacles away from the seaming head, said table having a narrow ledge extending over the run way, whereby when the receptacles are slid on said table on to said ledge they will fall into said run way.

22. The combination of a seaming head, of a shaft, means between said shaft and said seaming station for operating the same, of means for feeding receptacles to said seaming station, including a rotating drum on which the thread is wound irregularly so that it has a constant pitch and a dwell combined, and means for driving said drum directly from the shaft to the seaming head.

23. The combination of a seaming head, of a shaft, means between said shaft and said seaming station for operating the same, of means for feeding receptacles to said seaming station, including a rotating drum on which the thread is wound irregularly so that it has a constant pitch and a dwell combined, means for driving said drum directly from the shaft to the seaming head, and

means for discharging the finished receptacles from said seaming head. 40

24. The combination of a seaming head, of a shaft, means between said shaft and said seaming station for operating the same, of means for feeding receptacles to said seaming station, including a rotating drum on which the thread is wound irregularly so that it has a constant pitch and a dwell combined, means for driving said drum directly from the shaft to the seaming head, means for discharging the finished receptacles forming said seaming head, and means for carrying off the receptacles after they have been discharged from the seaming head. 45 50

25. The combination of an operating station, of means for feeding receptacles to said operating station, including a drum on which a thread is wound irregularly, so that it has a constant pitch and a dwell combined, means for discharging the finished receptacles from under the seaming head and means for carrying off the receptacles after they have been discharged from the seaming head. 55 60

In testimony whereof we affix our signatures, in presence of two witnesses.

LOUIS C. KRUMMEL.

JOHN C. TALIAFERRO.

Witnesses to the signature of Louis C. Krummel:

GEORGE S. HULL,

WM. G. BISSELL.

Witnesses to the signature of John C. Taliaferro:

E. G. MASON,

C. L. STURTEVANT.