

C. W. GRAHAM.
CAN END LINING MACHINE.
APPLICATION FILED APR. 17, 1916.

1,389,752.

Patented Sept. 6, 1921.

8 SHEETS—SHEET 1.

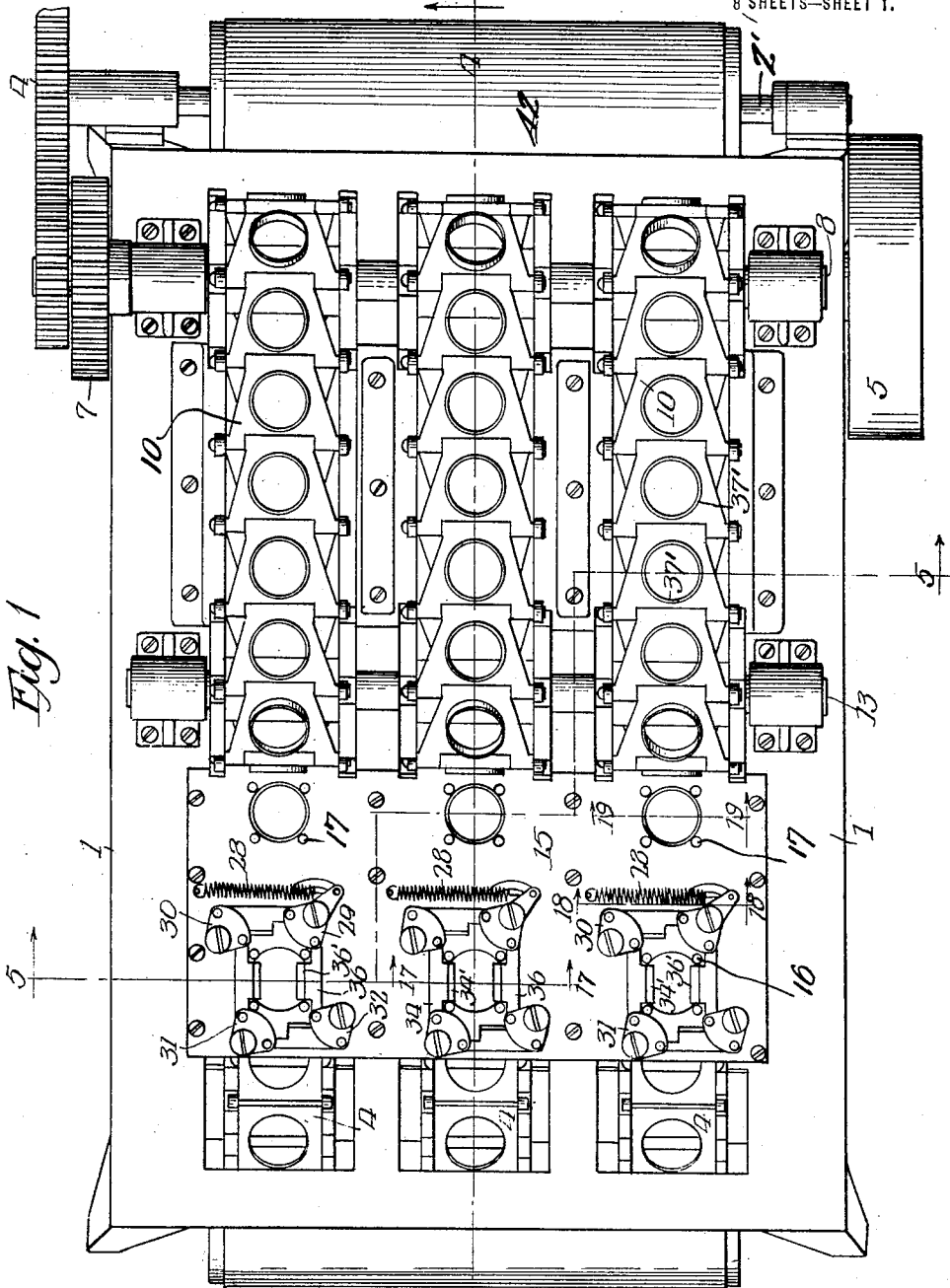


Fig. 1

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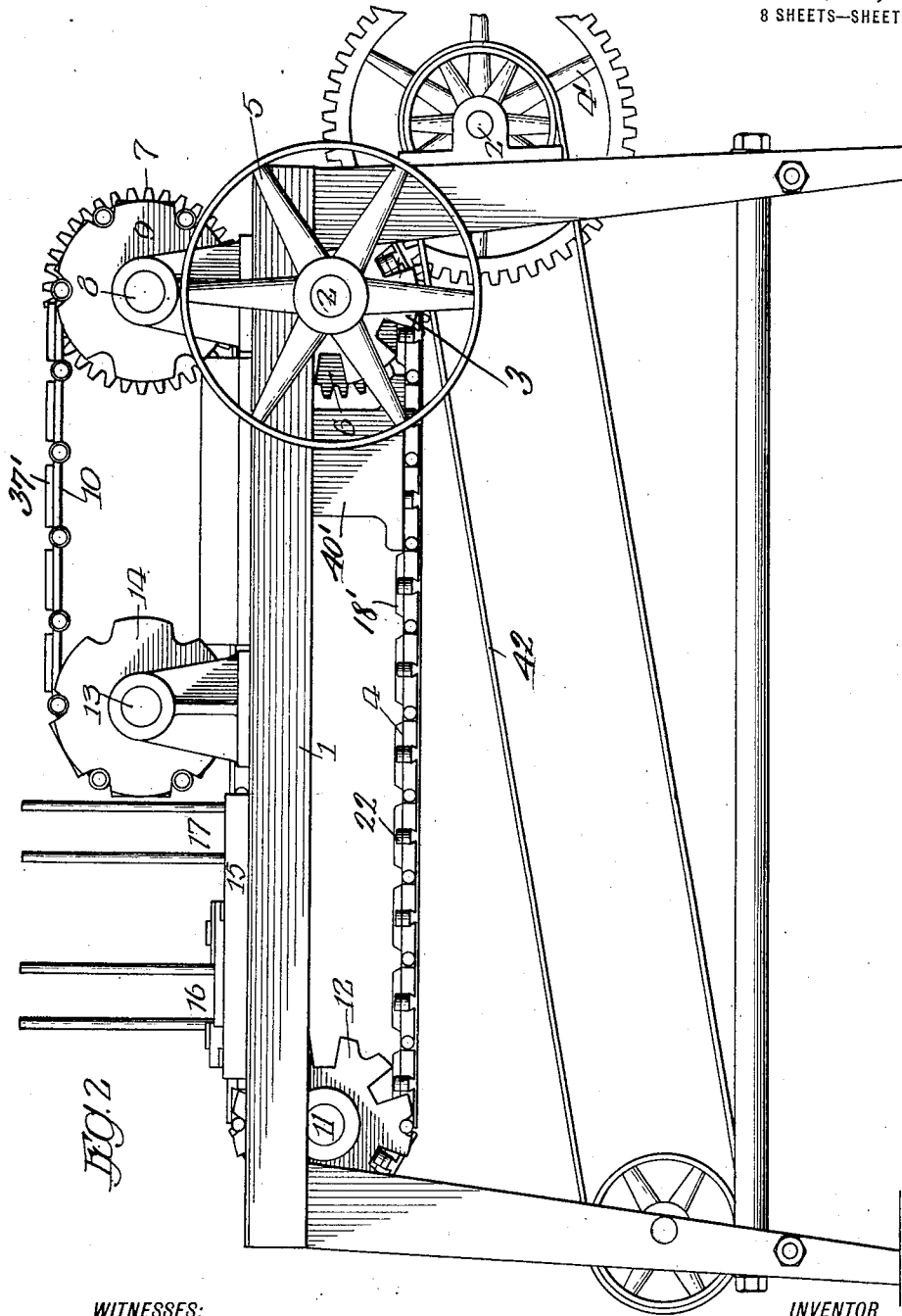
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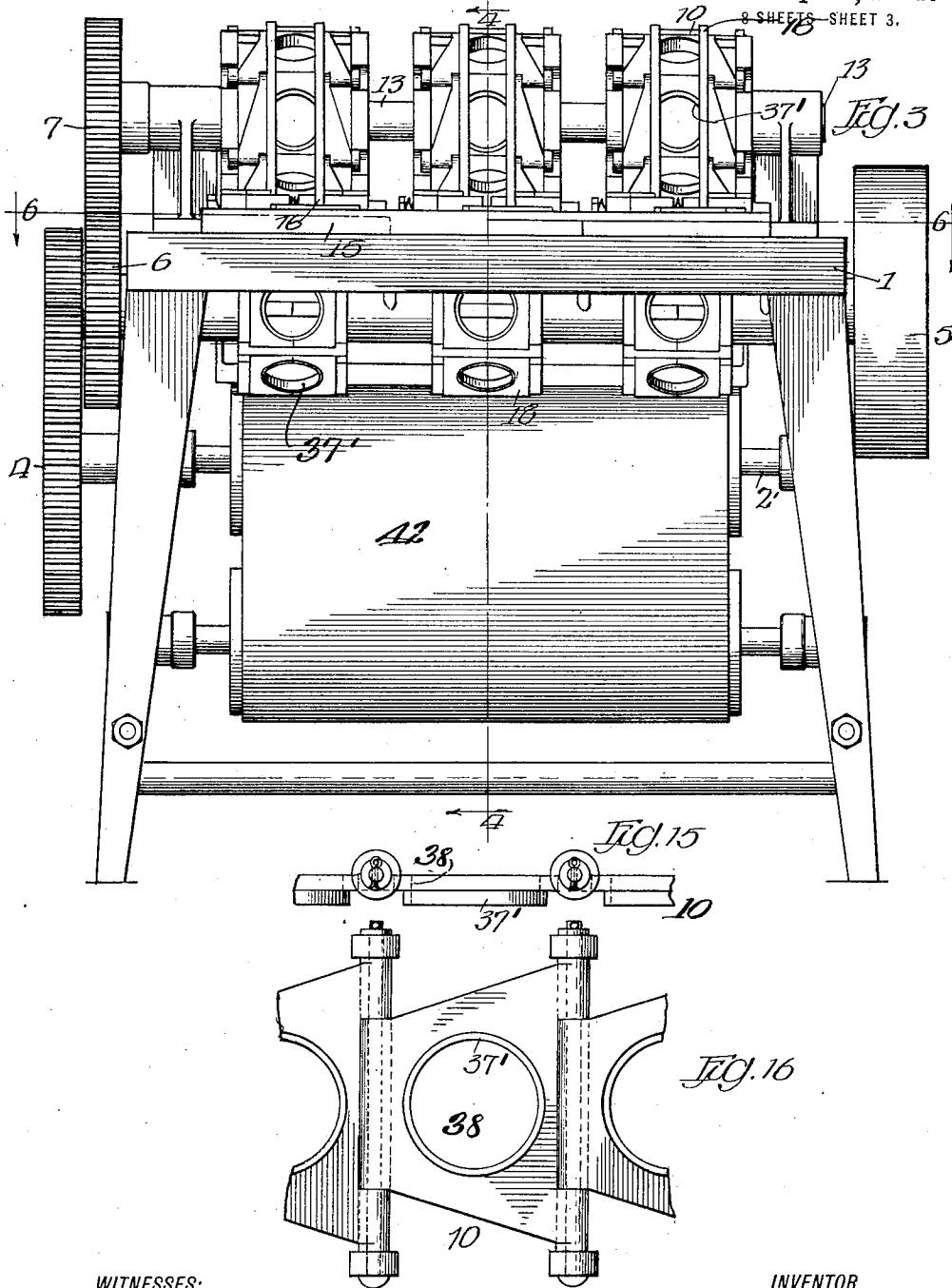
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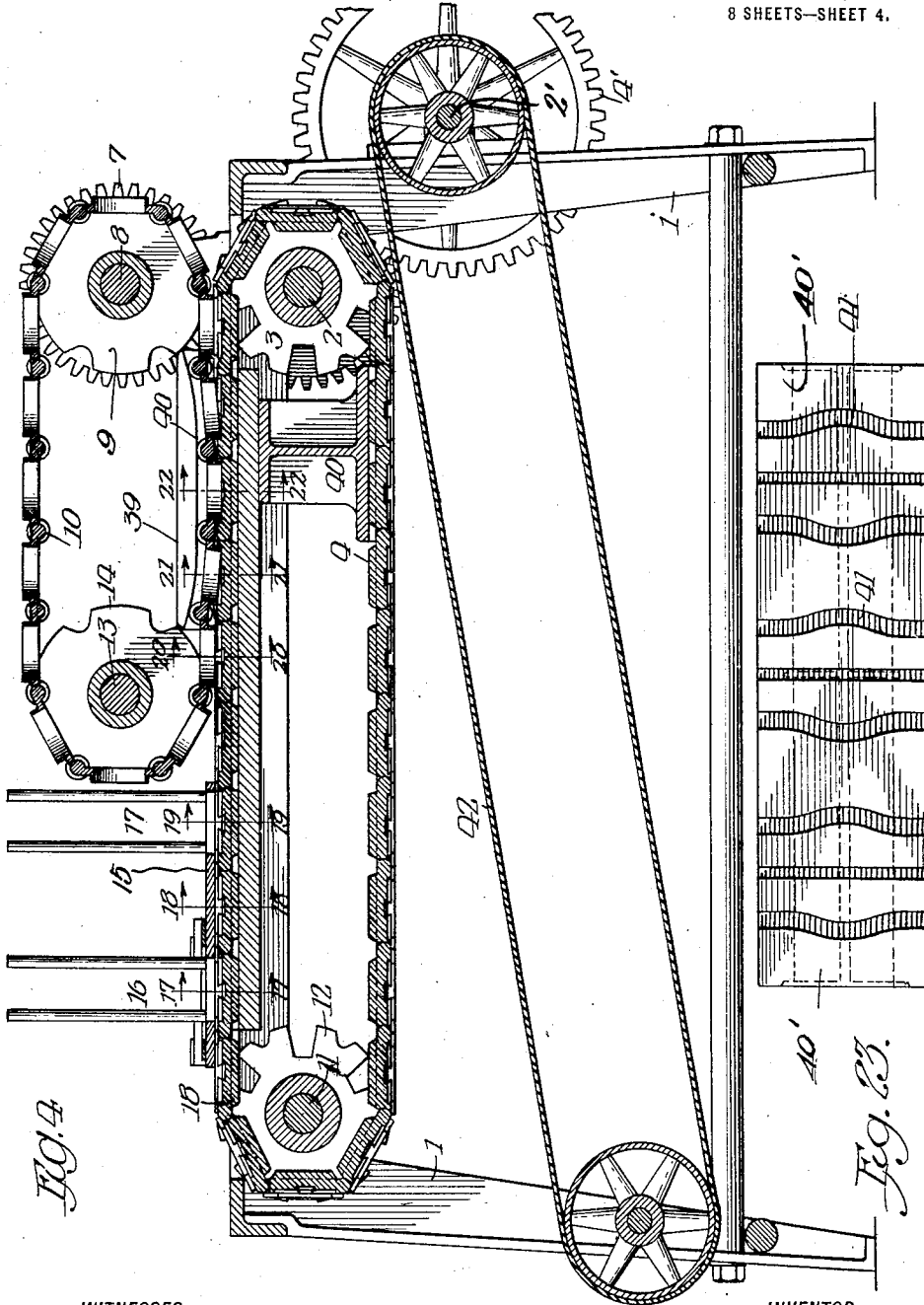
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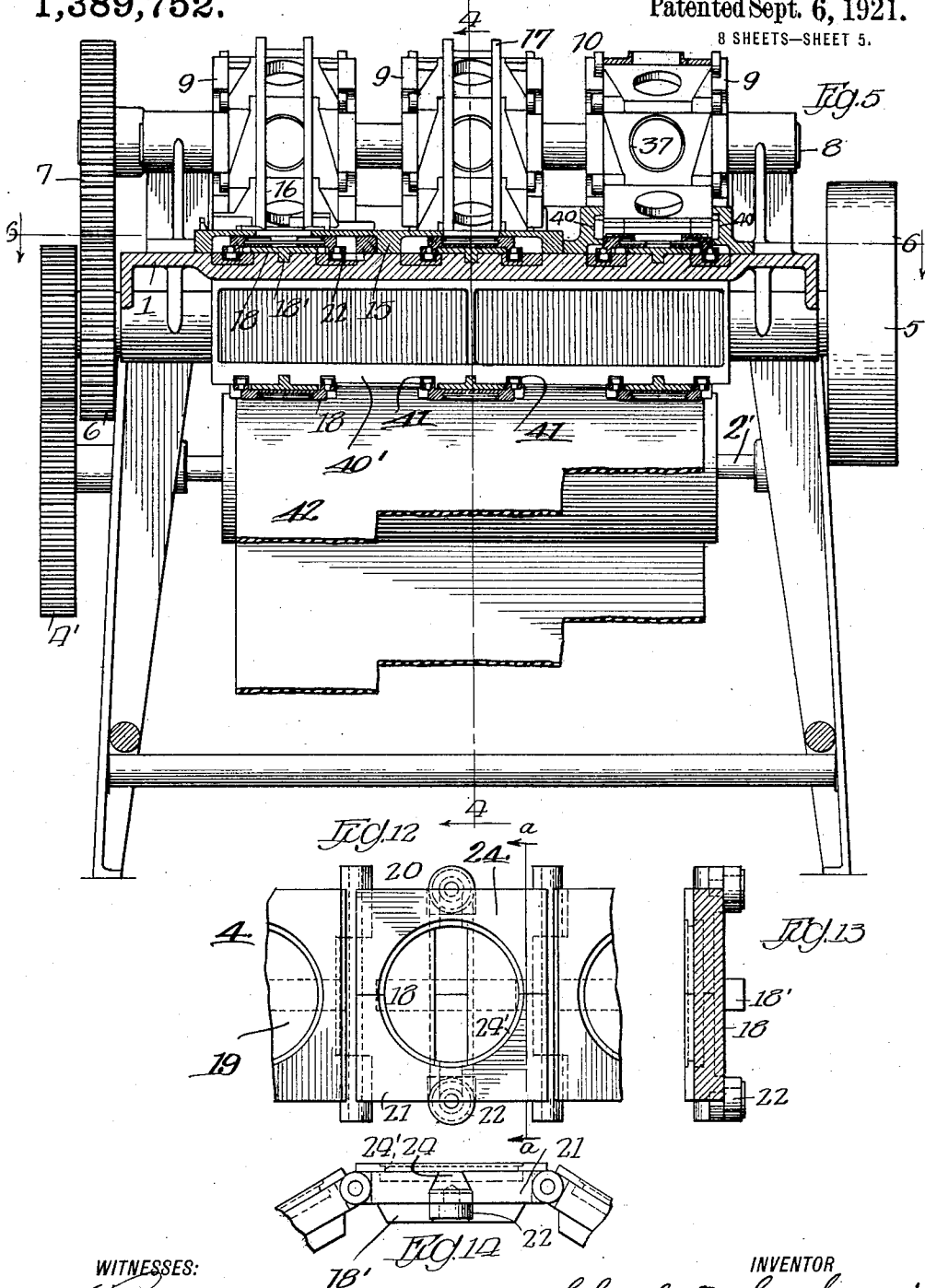
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8 SHEETS—SHEET 5.



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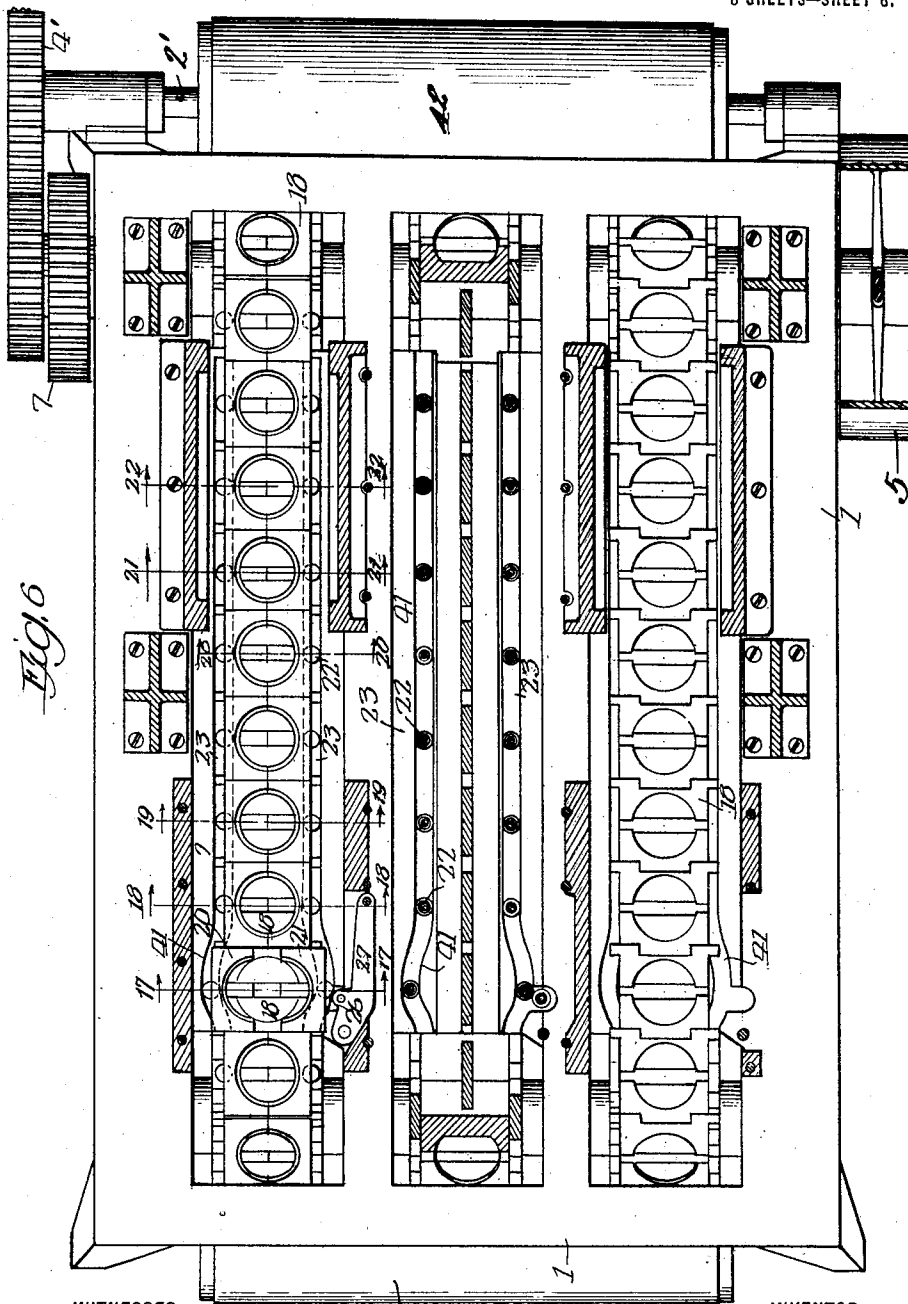
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8 SHEETS—SHEET 6.



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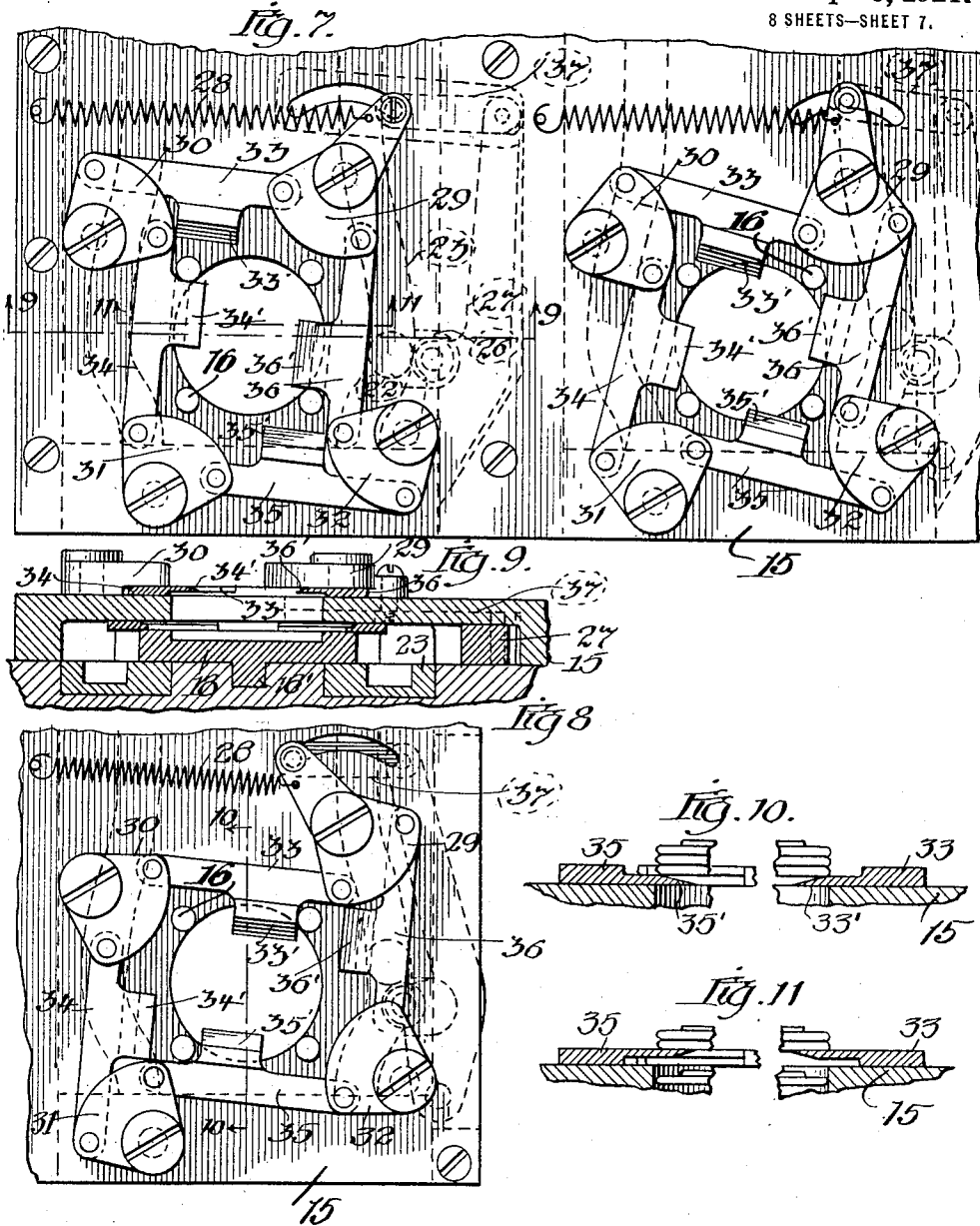
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8 SHEETS—SHEET 7.



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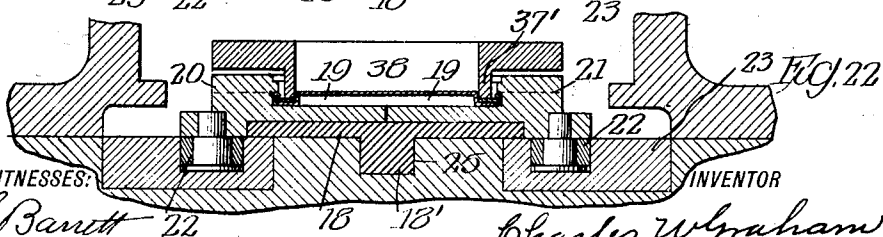
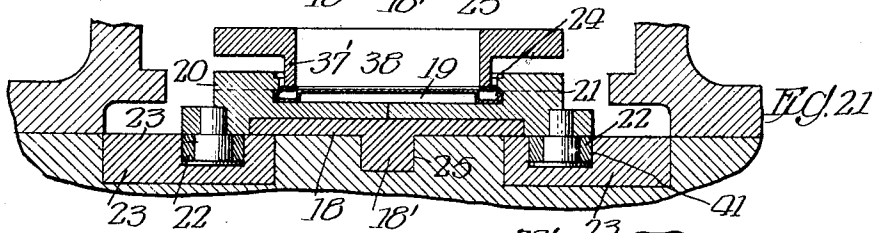
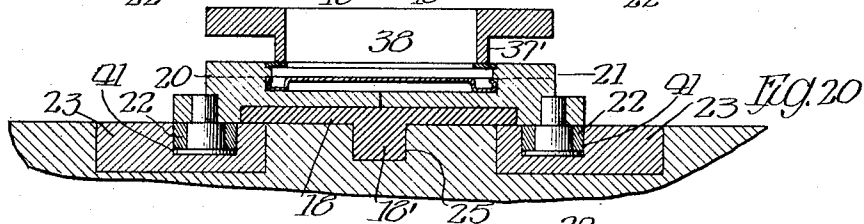
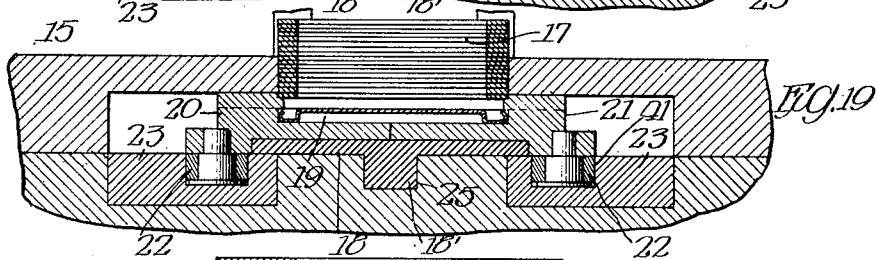
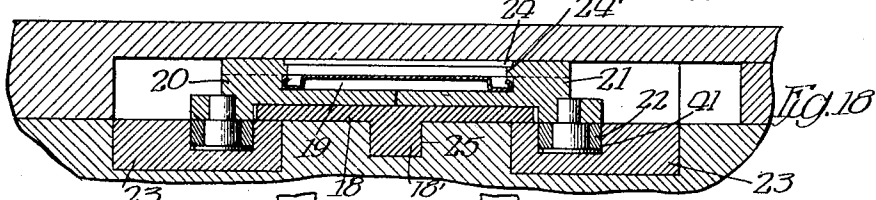
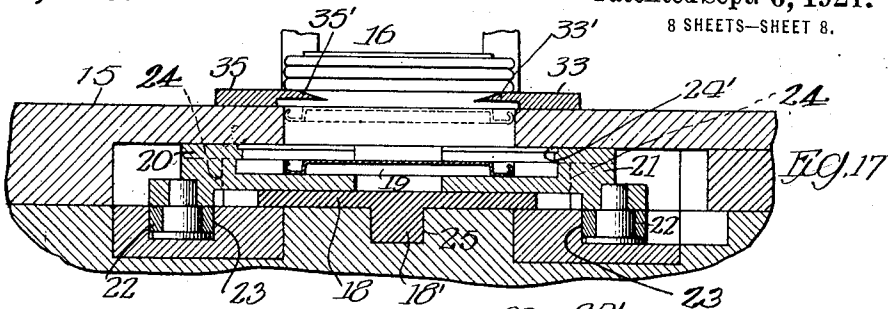
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8 SHEETS—SHEET 8.



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UNITED STATES PATENT OFFICE.

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CAN-END-LINING MACHINE.

1,389,752.

Specification of Letters Patent.

Patented Sept. 6, 1921.

Application filed April 17, 1916. Serial No. 91,740.

To all whom it may concern:

Be it known that I, CHARLES W. GRAHAM, a citizen of the United States, residing at Crestwood, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Can-End-Lining Machines, of which the following is a specification.

This invention relates to machines for automatically applying can end liners to the flanges of can ends for forming hermetic folded seams with flanged can bodies, for use as food containers wherein it is necessary and desirable that the sealing medium be previously assembled with the cover of the container for facility in handling and transporting.

This invention comprises a continuously moving conveyer, built up of a series of members adapted to pass successively under a can end feed chute or stack, where a single can end is deposited into an orifice in the conveyer member, and then to pass directly under a chute or stack of previously cut can end liners, and receive a single can end liner in the same orifice but superposed in spaced alinement with the previously placed can end, to then pass under or adjacent a second continuously moving member carrying assembling devices that aline with the aforesaid orifices and enter the same, and thereby move the can end liner toward the can end and cause it to be deposited on the flange of the can end, to then pass to a point of discharge where the lined can end is ejected from the machine.

A principal object of the invention lies in the production of a full automatic machine having continuous uninterrupted motion of the lining mechanism, whereby all of the movement of the mechanism is utilized in useful work, in contradistinction to intermittently operated machines where the mechanism is interrupted and some time thereby lost, thereby giving a greatly increased output with a normal speed of operation. I have illustrated in the drawings attached hereto the invention applied to a multiple machine, which arrangement conduces to a high capacity output with a very slow speed of operation, and thereby greatly enhances the facility of operation and inspection.

Another principal object of the invention resides in so designing and constructing a continuous can end lining machine that prac-

tically all of the operating mechanism is accessible, thereby enabling an operator to easily see and observe the operation of the machine.

Another object of the invention resides in the manner of depositing the can ends and liners in a recess and holding them in separated assembling relation while bringing them into the zone of assembling mechanism where the liner is deposited on the flange of the can end the two being held in positive alinement during this operation.

The drawings illustrate a multiple machine but it is readily seen that a single unit embodying one third of the machine would constitute a machine having every facility for automatically applying liners to can ends, having a somewhat lower capacity but none the less efficient.

Figure 1 is a plan showing the can end and cut liner feed stations in relation to the transporting conveyer and the assembling conveyer.

Fig. 2 is a right hand side elevation of Fig. 1.

Fig. 3 is an end elevation of Fig. 1.

Fig. 4 is a vertical sectional elevation taken on line 4—4 of Fig. 1 and clearly illustrates details of construction and relative locations of various working elements.

Fig. 5 is a vertical section taken on a zig-zag line indicated at 5—5 of Fig. 1.

Fig. 6 is a sectional plan taken on line 6—6 of Fig. 5, looking down on the machine and showing clearly the mechanism for operating the opening and closing movements of the orificed conveyer members.

Fig. 7 is a plan view illustrating the can end feed device for two of the three conveyers.

Fig. 8 is a similar view of the parts of the mechanism in another position.

Fig. 9 is a vertical sectional view on line 9—9 of Fig. 7.

Figs. 10 and 11 are similar sectional views on a smaller scale illustrating two positions of the can end feeding device, in connection with a few can ends which are illustrated in said figures.

Fig. 12 is a plan view of a portion of the can end and ring liner conveyer.

Fig. 13 is a sectional view on line a—a of Fig. 12.

Fig. 14 is an end view of the parts shown in Fig. 12.

Figs. 15 and 16 are detail views of one of the members of the continuously moving assembling means.

Fig. 17 is a vertical sectional view taken on line 17—17 of Figs. 4 and 6, showing the relative positions of the orificed conveyer members and can end stack feed and positions of the orifice cams and slides controlling the opening of the orifices to admit a can end. The dotted lines show the can end just dropping to the position shown in full lines.

Fig. 18 is a similar view taken on line 18—18 of Figs. 4 and 6, showing the same conveyer parts after having received the can end and passed forward from under the can end stack.

Fig. 19 is a similar view taken on line 19—19 of Figs. 4 and 6, showing the same conveyer parts just as they pass under the can end liner stack, a can end liner being seen in the recess of the conveyer member.

Fig. 20 is a similar view taken on line 20—20 of Figs. 4 and 6, showing the same conveyer parts, after they pass beyond the can end liner stack, and are just approaching into alinement with an assembling member, the conveyer member holding the liner and can end in spaced relation ready for assembling.

Fig. 21 is a similar view taken on line 21—21 of Figs. 4 and 6, showing the same conveyer parts after they have advanced a little farther, and showing the assembling member entering the orifice of the conveyer member and forcing the liner past its supporting ledge down over the shoulder of the can end and past the curled edge of the can end flange.

Fig. 22 is a similar view taken on line 22—22 of Figs. 4 and 6, of the same conveyer parts, having advanced to the point where the assembling member has completed the operation of assembling the superposed can end liner with the can end.

Fig. 23 is a view of the under side of the cam member controlling the discharge of the lined can ends.

A framework 1 carries the entire operating mechanism; a drive shaft 2 is mounted near one end of the frame 1 and carries sprockets 3 which in turn carry one each of the continuous conveyers 4; the outer ends of the shaft 2 carry the drive pulley 5 and gear 6, which gear meshes with and drives a gear 7 mounted on a shaft 8, carrying sprockets 9 which in turn support and drive the assembling conveyer 10. The opposite end of the conveyer 4 is supported by a shaft 11 and sprockets 12, and the opposite end of the assembling conveyer 10 is carried by a shaft 13 and sprockets 14.

Located over the conveyers 4, is a plate 15 carrying can end feed stack holders 16 having automatic separating and discharging

mechanism, and also carrying can end liner feed stack holders 17. The conveyer 4 is made up of orificed link blocks 18, shown in detail in Figs. 17 to 22 and shown in plan, section and side views in Figs. 12, 13 and 14 and in open and closed plan views in Fig. 6 and in linked relation in Fig. 4.

Each member 18 has an orifice 19 in its top flat face, partly covered by shouldered slidable jaws 20 and 21. These jaws are opened and closed at predetermined intervals by means of rollers 22 carried by the jaws, riding in fixed longitudinal cam tracks 23. The jaws 20 and 21 move in dovetail guides 24, Fig. 14, and are thereby guided accurately and truly and made to aline properly as they come together to produce the circular ring liner receiving orifices 19. The link members 18 are joined together to form the continuous conveyer 4 (Fig. 4) which is driven continuously by the mechanism shown.

The orifices 19 of the link member 18 are each adapted to automatically receive a can end from a stack and then the sliding jaws are closed laterally against each other and move along underneath a can end liner stack, and there automatically receive in their upper part above said can end a liner from the stack and hold it in spaced relation to the can end, to move while both are so held to assembling means where the liner and end are assembled as a complete unit.

The oppositely sliding jaws 20 and 21 are provided with shouldered recesses 24' of a diameter and depth just sufficient to admit one can end liner as they pass under the liner stack, the tops are flat and smooth so as to offer no obstruction to the proper feeding of a single liner as they pass under the liner stack. The link members 18 are guided in a direct linear path by means of the guides 18' riding in suitable grooves 25 in the bed of the machine. These elements hold every link member 18 in perfect alinement with the various cooperating parts as they move along.

The assembling means consists of a continuously moving block conveyer running parallel with the aforementioned conveyer 4, and at the same linear speed and so timed and adjusted that the assembling elements enter the orifices of the conveyer members 18 and assemble the liner with the can end while both conveyers are moving continuously and uniformly.

The can end feed arrangement is illustrated in Figs. 7, 8, 9, 10 and 11 and is operated by the movement of the conveyer 4. The rollers 22 in riding through the cam track 23 contact with a roller 26 on a feed lever 27, moving it outward as shown in Fig. 7, against the pull of the spring 28.

There are four rocker members, 29, 30, 31 and 32, arranged in equidistant relation

around the can end stack; they are all connected together with combined link and separating members 33, 34, 35 and 36, each carrying knife edge projections 33', 34', 35' and 36', adapted to move alternately, in pairs, into and out of engagement with the can ends during their movement. The rocker lever 29 is connected to the feed lever 27 by a link 37.

In the operation of this automatic feed, the stack of can ends is always supported by one pair or the other of the pairs of separating members, and by their alternate movement and stepped relation, feed or discharge a single can end from the bottom of the stack at each completed alternation. The two members 34 and 36 form a pair and the members 33 and 35 form the alternate pair. The knife edge projections 34' and 36' are stepped above the projections 33' and 35' the thickness of one can end and by their alternate movement into and out of the vertical zone of the stack operate to separate and discharge a single can end at each cycle. The timing is such that the can end is dropped slightly in advance of the approach of the orificed member 18 into vertical alignment with the stack of can ends, so that the discharged can end will be released and ready to drop into the orifice as it reaches the proper position.

The operation of the machine is as follows: The stack chutes 16 are filled with can ends and the stack chutes 17 are filled with previously formed can end liners. By reference to Figs. 17 to 22 it is readily seen just how the sequence of operations takes place and by reference to Fig. 4 the general location of the different stations are easily comprehended. As the machine starts, a conveyer member approaches the can end stack and as the rollers 22 enter the cam grooves 23 they are deflected outward from their normal linear direction (Figs. 6 and 17), contacting with the rollers 26 on the feed levers 27 causing a movement of the can end feed mechanism that separates and drops a single can end into the orifice of the member 18; this outward movement of the rollers 22 also opens the jaws 20 and 21, thereby permitting the can end to pass down into the orifice 19. It is necessary to open the jaws 20 and 21 at this point, since the recessed opening of the jaws, when they are closed, would not permit a can end to pass through. This recessed opening has the said shoulder 24' to support the liner until it is assembled with the can end and the diameter of the opening through the shouldered portion is substantially the same as the diameter of the opening in the flange of the can end produced by the curled edge of the flange. This shoulder 24' acts as a guide for the liner and as a guard over the edge of the curl on the can end, and forms a posi-

tive guiding channel that leads the liner over the shoulder of the can end and onto the flange thereof during the assembling operation.

In Fig. 17 a link member is just passing under a can end feed chute, a roller 22 has contacted with a roller 26 on a lever 27 of the can end feed mechanism, operating the same to separate and drop a single can end (the can end as released being shown by dotted lines) so it will pass into the orifice 19. During the continued movement of the link members 18 the jaws 20 and 21 are closed over the deposited can end; this position is well shown in Fig. 18. This view also shows very clearly the recess and shoulder 24' and the can end resting in the orifice with the curled edge covered by the shoulder 24'. The member 18 now moves along underneath the liner stack holder 17 and a liner falls into the recess, as shown by Fig. 19, and rests on the shoulder 24' in axial alignment and spaced relation with the can end in the orifice. The liner in the recess 24 is separated from the stack simply by sliding therefrom in being carried along by the member 18. From now on until the lined ends are discharged the jaws 20 and 21 remain closed and during the assembling of the can end and liner are held locked in closed position by the cam grooves 23. The assembling conveyer 10 is composed of link blocks shown in detail in Figs. 15 and 16. Each link block carries an orifice 38 extending into a ring or annular assembling member 37', the orifice 38 being of a diameter to freely pass over the shoulder of the can end, and the assembling member 37 having an outer diameter to freely pass through the opening formed by the shoulder 24' of the jaws 20 and 21. By reference to Fig. 4 will be seen a fixed cam rail 39, under which the assembling conveyer 10 passes as it moves in unison with the conveyer 4, having a deflecting face 40 against which rollers on the links ride and thereby carry the assembling members 37 down into the orifices of the members 18. Fig. 20 is taken at a point where the assembling member 37' is just approaching the orifice 19 and is just contacting with the liner resting in the recess 24 on the shoulder 24'. A further movement forward of the two conveyers moving in unison, causes the assembling member 37' to gradually pass down into the orifice 19 and thereby force the liner past the shoulder 24' as shown in Fig. 21 and deposit it around the shoulder of the can end into the recess, channel, annular groove or space formed by the shoulder and the curled edge of the can end as shown by Fig. 22.

The assembling operation being completed, further movement of the conveyers 4 and 10 causes the member 37' to gradually rise out of the orifice 19 while the conveyer

4 carries the lined can end confined in the orifice 19 down around the sprocket 3 to a discharge station provided by the frame member 40', Fig. 4, where camways 41, Fig. 5 23, engage the rollers 22 of the jaws 20 and 21 and cause the jaws to open thereby releasing the lined can end and permitting it to drop onto the discharge belt 42, which carries it to a receiving box or receptacle, not shown. The conveyor 42 is operated from a gear wheel 4' on a shaft 2'.

It is easily seen that a continuous and uniform movement of the conveyers 4 and 10 at a very comfortable speed will give a very high capacity and produce a practically noiseless assembling operation.

It is believed this is the first instance in the operation of an automatic can end lining machine wherein a continuously movable conveyor member receives a can end from a supply of previously formed can ends, then receives a can end liner from a supply of previously formed can end liners, holding them in spaced relation and axial alinement and carries them so positioned to continuously moving assembling mechanism where the liner and can end are assembled as a complete unit, while the parts have continuous transporting movement.

While I have preferred to show my invention as applied to a multiple machine, I do not wish to confine it to such construction as it is equally well adapted to be applied to a simple construction embodying a single conveyor, continuously moving, for receiving can ends and liners, and holding them in assembling position while passing into the zone of assembling mechanism that automatically assembles them into a single unit.

The can end feed mechanism shown and described is not a part of this invention but is being covered in a separate application.

What is claimed is:

1. In a machine for placing can end liners onto the flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a continuously movable hinged member adapted to receive a can end and a can end liner, and having means for holding same in spaced assembling relation, and continuously moving assembling mechanism mounted separately from said hinged member, whereby the said liner is passed along the shoulder of said can end onto the flange thereof; and means for discharging the lined can end.

2. In a machine for placing can end liners onto the flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a continuously horizontally movable hinged member adapted to receive a can end and a can end liner in horizontal positions and having means for holding same in spaced assembling relation, and continuously moving

ing hinged assembling mechanism, whereby the said liner is passed along the shoulder of said can end onto the flange thereof; and means for discharging a lined can end.

3. In a machine for placing can end liners on to the flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, the combination of a conveyer having hinged elements, holders for supplies of can ends and can end liners arranged adjacent and automatically delivering said can ends and liners separately and successively to the elements of said hinged conveyer, means for moving said conveyer successively past said holders to receive separately a can end and a can end liner, and a hinged assembling member for assembling said liner and said can end.

4. In a machine for applying previously formed can end liners to the outstanding curled flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member having continuous linear movement and an assembling member having continuous linear movement, said conveyer member having orifice holders adapted to receive shouldered can ends and can end liners in spaced relation and assembling alinement, and stack holders for said ends and liners, said conveyer member acting to convey said can ends and said liners while held in such relation into operative relation with the said assembling member, said assembling member having dies and means for causing said dies to press on the ring liners, whereby the said liners are caused to pass over the shoulder of the said can end and be deposited on the outstanding flange of same; and means for discharging the lined can ends; said stack holders operating to hold can ends and ring liners in contact with said conveyer member.

5. In a machine for applying previously formed can end liners to the outstanding curled flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a hinged conveyer member having continuous linear movement and a hinged assembling member having continuous linear movement, said conveyer member having orificed holders adapted to receive shouldered can ends and can end liners in spaced relation and assembling alinement, and stack holders for said ends and liners, said conveyer member acting to convey said can end and said liners while held in such relation into operative relation with the said assembling member, said assembling member having dies and means for causing said dies to press on the ring liners, whereby the said liners are caused to pass over the shoulder of the said can end and be deposited on the outstanding flange of same; said stack holders operating

to hold can ends and ring liners in contact with said conveyer member.

6. A machine for placing previously formed can end liners onto the flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member composed of hinged units, and an assembling member composed of hinged units; a holder for a supply of previously formed shouldered can ends, and a holder for a supply of previously formed can end liners; means for first moving the said conveyer member underneath the holder for shouldered can ends and then underneath the holder for can end liners where it receives successively single can ends and single liners, and for then moving said conveyer into operative relation with the said assembling member, and means for actuating units of said assembling member whereby the said can ends and the said liners are brought together into assembled units; and means for discharging same.

7. A machine for placing previously formed can end liners onto the flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member composed of hinged units, each having linear movement; a holder for a supply of previously formed shouldered can ends, and a holder for a supply of previously formed can end liners an assembling member; means for first moving the said conveyer member underneath the holder for shouldered can ends and then underneath the holder for can end liners where it receives successively single can ends and single liners, and for then moving said conveyer into operative relation with the said assembling member, and means for actuating units of said assembling member, whereby the said can ends and the said liners are brought together into assembled units; and means for discharging same.

8. A machine for placing previously formed can end liners onto the flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member composed of hinged units having orificed holders, and an assembling member composed of hinged units having assembling means; a holder for a supply of previously formed shouldered can ends, and a holder for a supply of previously formed can end liners; means for first moving the said conveyer member underneath the supply of shouldered can ends and then underneath the supply of can end liners where it receives successively, in said orificed holders, single can ends and single liners, and for then moving said conveyer into operative relation with the said assembling member, and means for actuating units of said assembling member whereby the said can ends and the said liners are brought to-

gether into assembled units; and means for discharging same.

9. A machine for placing previously formed can end liners onto the flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member composed of hinged units having orifices, and an assembling member composed of hinged units, each having linear movement in the same direction; a stack holder for a supply of previously formed shouldered can ends, and a stack holder for a supply of previously formed can end liners; means for first moving the said conveyer member underneath the stack holder for shouldered can ends and then underneath the stack holder for can end liners where it receives successively single can ends and single liners, in said orifices, and then moving said conveyer into operative relation with the said assembling member, and means for actuating units of said assembling member whereby the said can ends and the said liners are brought together into an assembled unit; and means for discharging same.

10. In a machine for assembling previously formed can end liners with previously formed shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member having linear movement and composed of orificed hinged units, and an assembling member having linear movement and composed of hinged annular die units, the said conveyer member and said assembling member moving parallel and in unison and operative relation; means for feeding can ends and can end liners into spaced relation, into the orifices of the hinged units of said conveyer member, whereby they are brought into the zone of the assembling member and the held liners and can ends are assembled as complete units; and means for discharging the complete units.

11. In a machine for assembling previously formed can end liners with previously formed shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member having linear movement and composed of orificed hinged units, and an assembling member having linear movement and composed of hinged units having assembling means of annular form to bear on the liners, the said conveyer member and said assembling member moving parallel and in unison and operative relation; stack holders for can ends and can end liners respectively; and means for feeding can ends from the bottom of a stack and can end liners from the bottom of a stack into spaced relation, into the orifices of the hinged units of said conveyer member, whereby they are brought

into the zone of the assembling member, and means for actuating units of said assembling member whereby the held liners and can ends are assembled as complete units, and means for discharging the complete units.

12. In a machine for assembling previously formed can end liners with previously formed shouldered and flanged can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member having continuous horizontal linear movement and composed of orificed hinged units, and an assembling member having continuous horizontal linear movement in the same direction and composed of hinged units having annular flanges to bear on the liners, the said conveyer member and said assembling member moving continuously parallel and in unison and operative relation; and means for feeding shouldered and flanged can ends and formed can end liners into spaced relation and axial alinement into the orifices of the hinged units of said conveyer member, and means whereby, as they are brought into the zone of the assembling member the annular flange portions of the said assembling members are caused to contact with the held liners and by axial movement force them around the shoulders and onto the flanges of the positioned can ends, whereby the said liners and can ends form a complete unitary article.

13. In a machine for assembling previously formed can end liners with previously formed shouldered and flanged can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member having linear movement and composed of hinged units having shouldered orifices and an assembling member having linear movement and composed of hinged units having annular flanges to bear on the liners, the said conveyer member and said assembling member moving continuously parallel and in unison and operative relation; means for successively feeding can ends and can end liners into spaced relation and axial alinement, one above the other, into the orifices of the hinged units of said conveyer member, whereby they are brought into the zone of the assembling member and means whereby units of said assembling member are actuated and the held liners and can ends are assembled as complete units; and means for discharging the complete units.

14. In a machine for placing previously formed can end liners onto the flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member having linear movement and being made up of hinged units, each of said units having an orifice and a shoulder adapted to receive can

ends and can end liners and hold same in spaced relation and assembling alinement; an assembling member having linear movement and being made up of hinged units each of said units having an orifice adapted to receive the shouldered portion of a can end; and means for moving the said conveyer member and the said assembling member in parallel and timed relation, and means for actuating units of said assembling member whereby can ends and can end liners carried by said conveyer member are assembled as a complete unit.

15. In a machine for placing previously formed can end liners onto the flanges of shouldered can ends for forming interfolded hermetic joints with flanged can bodies, in combination: a conveyer member having linear movement and being made up of hinged units, each of said units having an orifice adapted to receive can ends from a positioned supply and can end liners from a positioned supply and hold same in spaced relation and assembling alinement, stack holders for can ends and liners respectively; an assembling member having linear movement and being made up of hinged units each of said units having an orifice adapted to receive the shouldered portion of a can end; and means for moving the said conveyer member and the said assembling member in parallel and timed relation, and means for actuating units of said assembling member whereby can ends and can end liners carried by said conveyer member are assembled as a complete unit.

16. In a machine for lining can ends, in combination: a conveyer member movable continuously under positioned supplies of can ends and can end liners and stack holders for said ends and liners respectively, whereby can ends and can end liners are received by said conveyer, and mechanism separate from said conveyer member and coöperating with said conveyer member whereby the can ends and liners are assembled as complete units.

17. In a machine for placing can end liners onto the flanges of shouldered can ends; a conveyer member formed with a recess having an inner and an outer part; a movable member restricting the mouth of said recess; means for moving said movable member whereby a can end may pass into said recess; means for placing a can end in the inner part of said recess; means for placing a can end liner into the mouth of said recess; and devices for assembling said can end and liner while each is held in said recess.

18. In a machine for placing previously formed can end liners onto the flanges of shouldered can ends for forming interfolded hermetic seams or joints with flanged can bodies, in combination: a continuously mov-

ing conveyer composed of hinged recessed members; a can end supply stack holder and a can end liner supply stack holder, located over the path of travel of said conveyer; means for separating a can end from said can end stack whereby it is deposited in a recess of a hinged member; means for separating a can end liner from the said liner stack whereby a liner is deposited in the same recess of the hinged member containing the deposited can end; continuously moving assembling mechanism; means for moving said hinged member containing in its recess the said can end and can end liner into alinement with said assembling mechanism, and means for actuating parts of said assembling mechanism whereby the can end liner is caused to pass around and over the shoulder of the said can end and be deposited on the flange thereof; and means for discharging the assembled can end and liner as a complete unit.

19. In a machine for placing previously formed can end liners onto the flanges of shouldered can ends for forming interfolded hermetic seams or joints with flanged can bodies, in combination: a continuously moving conveyer composed of hinged members having recesses; a can end supply stack and a can end liner supply stack, located over the path of travel of said conveyer; means for separating a can end from said can end stack whereby it is deposited in a recess of a hinged member; means for separating a can end liner from the said liner stack whereby a liner is deposited in the same recess of the hinged member containing the deposited can end; separable shouldered parts on said conveyer by which said end and liner are separated; means for moving said hinged member containing in its recess the said can end and can end liner into alinement with continuously moving assembling mechanism, and means for actuating parts of said assembling member whereby the can end liner is caused to pass around and over the shoulder of the said can and be deposited on the flange thereof; and means for discharging the assembled can end and liner as a complete unit.

20. A member adapted to receive can ends and can end liners and provided with walls defining a recess or orifice in said member formed with concentric receiving spaces and a shoulder; means for enlarging the space within the shoulder to admit a can end into one of the said concentric receiving spaces; means for placing a can end liner into another of said concentric receiving spaces, the can end and liner being separated by the said shoulder; means for assembling the said can end and can end liner while positioned in said recess.

21. A device adapted to receive a can end and a can end liner and provided with

walls defining a recess; a movable separating and supporting member forming a part of the walls of said recess; means for depositing a can end and a can end liner in said recess; assembling mechanism; and means for moving said can end and liner into the zone of said assembling mechanism for assembling the same while so deposited.

22. A device adapted to receive a can end and a can end liner and provided with walls defining a recess or orifice in said device; shouldered movable separating and supporting members forming a part of the walls of said recess; means for moving said members; means for depositing a can end and a can end liner in said recess; means for assembling the same while so deposited; and means for discharging the assembled article.

23. A movable device adapted to receive a can end and a can end liner and provided with walls defining a recess or orifice in said device; movable separating and supporting members forming a part of the walls of said recess; means for depositing a can end and a can end liner in said recess; and means for assembling said can end and liner while deposited in said recess comprising a member movable with said device and toward the same.

24. A device adapted to receive a can end and a can end liner and provided with walls defining a recess or orifice in said device; movable separating and supporting members forming a part of the walls of said recess and controlling the admission of a can end and liner into said recess; means for depositing a can end and a can end liner in said recess; assembling mechanism; means for bringing the said can end and liner while in said recess into operative relation with said assembling mechanism for assembling them into a complete unit.

25. In a machine for assembling ring liners and can ends, a traveling holding and alining element having a recess provided with an inner support for a can end and an outer support for a ring liner in axial alinement with said inner support, said outer support being movable to admit a can end past the outer support and to said inner support, and at the same side of the path of said holding element as that at which the ring liner is admitted, and a can end stack holder and a ring liner stack holder both arranged at the same side of said holding element and automatically feeding can ends and ring liners respectively and successively to the outer side of the holding element and to the recess of said holding element.

26. In a machine for assembling ring liners and can ends, an endless carrier consisting of traveling holding and alining elements hinged together, each of said elements having a recess provided with an inner support for a can end and an outer support for

a ring liner in axial alinement with said inner support, said outer support being constructed with separable parts to admit a can end past the outer support and to said inner support, and at the same side of the holder as that at which the ring liner is admitted, and a can end stack holder and a ring liner stack holder both arranged at the same side of said holding element and automatically feeding can ends and ring liners respectively and successively to the outer side of the holding element and to the recess of said holding element.

27. In a machine for assembling ring liners and can ends, the combination of an end-

less carrier comprising traveling and alining holding elements hinged together, each of said elements having a recess provided with an inner support for a can end, and having an axially alined outer support for a ring liner constructed with separable parts to permit the passage of a can end to said inner support, means for feeding can ends and means for feeding ring liners to the recesses of said carrier, both feeding means being arranged at the same side of said carrier for the successive delivery of can ends and ring liners respectively to its said recesses.

In testimony whereof I affix my signature.

CHARLES W. GRAHAM.