To all whom it may concern:

Be it known that we, Hugo W. Stark and William Knuts, citizens of the United States, residing at the city and county of San Francisco and State of California, have invented new and useful Improvements in Paper-Lining Machines, of which the following is a specification.

This invention relates to a paper lining machine, and embodies the principle of the machine of our prior Patent No. 1,121,776, dated December 22, 1914, for cutting blank shapes from sheet stock.

The chief object of the present invention is to provide a simple, practical machine of the rotary turret type, which is provided with means for cutting circular gaskets of paper or other conformable material and inserting them into can tops or ends, or other receptacles. Further, objects will appear hereinafter.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and shown in the accompanying drawings, in which—

Figure 1 is a plan view of the machine.
Figure 2 is a side elevation of the same.
Figure 3 is a side elevation taken from the opposite side to Figure 2.
Figure 4 is a plan section on the line 4-4 of Fig. 3.
Figure 5 is an enlarged section on line 5-5 of Fig. 1.
Figure 6 is an enlarged section through a portion of the apparatus taken on line 6-6 of Fig. 1.
Figure 7 is a bottom view of the cutting rings and suction cup.
Figure 8 is an enlarged longitudinal section through the paper feed rolls and table, showing the position of the guard plate.
Figure 9 is a plan view of Fig. 8.
Figure 10 is a side elevation of the cutter-head drive.
Figure 11 is a section on line 11-11 of Fig. 1.
Figure 12 is a plan view of a modified form of paper feed.
Figure 13 is a section on line 13-13 of Fig. 12.
Figure 14 is a side elevation of Fig. 12.
Figure 15 is a cross section of the can head feeding device shown in Figs. 1, 2 and 3.
Figure 16 is a fragmentary view partly in section showing the mechanism of the air valve and related parts.

Referring in detail to the drawings, A indicates a base-plate which is supported by legs or standards 2. Journalled on the lower side of the table is a main driving shaft 3 which is driven by a pulley 4 and a clutch of suitable construction. Journalled below the table, at the right angles to the shaft 3, is a cam-shaft 6 which is driven by shaft 3 by means of spiral gears 7, the speed ratio being approximately four to one. Vertically positioned and journalled in the base-plate and bearings 8 and 9 respectively, is a pair of shafts 9 and 10, and secured on said shafts is a pair of turrets 11 and 12, one on each shaft, these turrets being driven in unison by means hereinafter to be described.

Suitably journalled and vertically positioned below the table is a drive-shaft 13, which is driven from the cam-shaft by spiral gears 14, and forming a connection between the shafts 9 and 13 is a Geneva drive comprising the rotor 15, secured on shaft 13, and the disk 16, secured on shaft 9. The cam-shaft 6 and the drive-shaft 13 are driven in unison at the same speed ratio by the drive-shaft 3, while shaft 9 is intermittently rotated by the Geneva drive shown (see Fig. 4). Movement is in turn transmitted from shaft 9 to drive shaft 10 through spur gears 17 and 18 (see Figs. 2 and 3), thus permitting the turrets 11 and 12 to be intermittently moved in unison with each other but in opposite directions, as indicated by the arrows in Fig. 1.

Suitably secured, by means of screws 17, to turret 11 is a plurality of cutting rings 18, of which six sets have been provided in the present instance, and journalled in the base-plate A, below the turret and the cutting rings carried thereby, is a cutter head 19. Mounted below the turret 12 is a bed-plate 20, and formed in the face of the turret are six pockets 21 which are adapted to receive one can-end at a time, said can-ends being supplied by a feeding device generally indicated at 22. The table 20 is interrupted as shown in Fig. 3 so that the gasketed tops may fall through the pockets into a chute which extends under the edge of the turret.

The object of the present invention is to provide means for cutting circular gaskets from conformable material and inserting
same in an annular groove 23 formed in the can end, and this is accomplished as follows: The material from which the gaskets are cut is delivered from a roller or other means of supply as a continuous strip 24 to a pair of feed rollers 25 and 26 and is fed by said rollers between a set of cutting rings and the cutter head 19. The lower feed roller is an idler and is preferably constructed of rubber, while the upper feed roller is continuously driven from the cam-shaft 6 by means of the bevelled gears indicated at 27 and 28. The intermittent feed or movement of the strip 24 is accomplished by providing a raised portion 29 on the driven roller 25, and as this engages the material and the lower roller sufficient pressure is brought to bear to feed the strip in a forward direction between the cutting rings and the cooperating cutter head. The strip will, however, remain stationary the moment the raised portion 29 has moved sufficiently to relieve the strip of pressure on the lower roller and the cutting of the gaskets takes place at this time.

This is accomplished as follows: Referring to Figs. 5, 6, and 7, it will be seen that the cutting rings are secured to a circular-shaped block 30, which in turn is secured to the turret by means of the screw 17. The cutting rings are mounted so that an annular space 31 is formed between same, which space determines the width of the gasket.

Mounted in the space between the cutting rings is a knock-out ring 32 which is adapted to be raised and lowered by means of a cross-head 33, slidably mounted upon a pair of guide-rods 34, and connected with the turret through means of arms 35. The knock-out ring, with connected cross-head, is normally supported in a raised position by means of springs 36. Fig. 5.

Mounted interiorly of the innermost cutting ring is a suction cup 37, Fig. 5, between which and the innermost ring is a formed annular groove 38 which is intermittently subjected to suction by means hereinafter to be described. Said suction takes place through a port 39, Fig. 7, formed in the block 30 and radiating grooves 40 which connect with the annular groove 38. The port 39 is in turn connected with a ported ring 41, Fig. 6 and Fig. 1, by a pipe 42. The ring 41 is provided with six ports and six pipes 25, one pipe 42 being connected with each plate 30 and port 39 and connected annular groove 38. The cutter head which cooperates with the cutting rings includes the head 19, Fig. 5. Formed on the upper side of the head is a track ring 43, which is yieldably mounted on springs 44 mounted in an annular groove 45 formed in the head, and mounted on top of the track ring is a plate 46, in which is mounted a plurality of hardened steel balls 47. An antifriction bearing 48 is preferably interposed between the plate 46 and the head.

The cutter head is formed integral with, or suitably secured upon, a vertically disposed shaft 49, and this shaft is continuously revolved by means of a sprocket gear 50 secured on the shaft, which in turn is driven by a chain 51, and a second sprocket 52 mounted on the shaft 49, which in turn is driven by the main drive-shaft 3 through the bevelled gears 54 (see Fig. 4). The shaft and cutter head while continuously rotated through the means just described is also adapted to be intermittently reciprocated to bring the cutting balls 47, carried by the head 19, into engagement with the cutting rings 18 for the purpose of cutting the gasket. The reciprocating movement is accomplished by means of a rocker-arm 55, Fig. 4, pivotally mounted, as at 56, upon a standard or bracket 57 and a cam 58 secured upon the shaft 6. This cam is so positioned as to engage with the rocker-arm 55 when the gasket strip is at rest and the turret has moved a set of cutting rings 18 into register with the cutting head. The raising of the cutter head, by means of the rocker-arm, forces the balls against the 95 strip and the cutting edges 96 of the rings with sufficient pressure to cause the material to be cut.

The spherical contour of the cutting balls 47 is such that the gasket, when cut, is forced up into the annular space 31 formed between the rings, while the center blank of material is held to the suction cup 37 by the vacuum produced in the annular groove 38.

Following the cutting action of the head 19 the cam 58 moves out of engagement with the rocker-arm and lowers the head into inoperative position. The driving inumber 15 of the Geneva movement then moves into engagement with the disk and 110 swings shaft 9, with connected tumbler 10 to bring the next set of cutting rings into register with the cutting head which is again raised, as previously described; the same cycle of operation taking place each 115 time the turret comes to rest and when a set of cutting rings is in register with the head.

The central blank, held by suction against the cup 37 is removed at the point indicated at 120 by means of a wiper 61. The central blank, held by suction against the cup 37 is removed at the point indicated at 66 (see Fig. 1) by means of a wiper 61. The vacuum is relieved at this point and the wiper arm 61 simultaneously swings into position below the suction cup, wherein it receives the paper blank 62 and swings it 125 out into the position indicated in Fig. 1 where it is received by a chute or like means not here shown.

The wiper arm consists of a bell-crank 63 pivotally mounted, as at 64, on the base 130...
plate. Slidably mounted in the outer end of the crank arm is a rod 65, Fig. 14, on the upper end of which is secured a plate carrying a rubber shoe 66. The lower end of the rod projects through the rocker-rod arm 31 is surrounded by a spring 64 which normally holds the shoe and plate in the depressed position shown in Fig. 14. The rocker-rod is intermittently swung about its pivot by means of a rod 62, Figs. 1 and 14, one end of which is attached to the rocker-rod, while the other end is attached to a slotted link 69, Figs. 1 and 12, which is pivotally mounted, as at 70, on a standard carried by the base plate.

Secured on the upper end of shaft 13 is a disk upon which is secured a crank pin 71, Figs. 1 and 12. This pin projects up into the slotted link 69 and rotation of the disk and pin rocks the disk and this rocking movement is transmitted through rod 68 to swing the rocker-rod 63 into and out of engagement with the suction cup that is standing at rest at the position indicated at 60. The swinging movement of the rocker-rod with the connected rubber shoe 66, is normally on a plane below that of the suction cups, but means have been provided by which the shoe is raised upwardly into engagement with the blank held by the suction cup. This is accomplished by providing a pair of rocker-rods 79 and 72, Fig. 1, pivoted at M and N respectively, their inner ends lying one upon the other at R. These arms are operated by means of a cam 73 and a connected push-rod 74, Fig. 3. The position of the cam is such that the rocker-arms 72 are only actuated when the rocker-rod 68, with connected shoe 66, is in register with a suction cup. The rocker-arms 72 when actuated at this time will engage the lower end of rod 67 and consequently lift same, with connected plate and shoe 66, against the tension of spring 65, upwardly into engagement with the blank 62; the blank being released from the cup simultaneously by relieving the vacuum in the cup, as will hereinafter be described. Return movement of the rocker-rod will, therefore, carry the blank to the discharging point where it is received by suitable means and removed from the machine. The gasket previously cut by the head 19 and forced up into the annular groove 31 still remains between the cutting rings and is removed therefrom by the knock-out ring 32 when the rings assume the position indicated at 75 (see Fig. 1) where the rings are in register with a can top carried by one of the pockets 31 formed in the can end, and as this is directly in register with the cutting rings the operation of cutting the gasket and inserting the same in the can end is here completed. The knock-out ring is actuated by a rocker-rod 70, Fig. 1, which is pivotally mounted, as at 77, on one side of a guide arm 78, which in turn is secured upon the base plate A. The opposite end of the arm is connected with a push-rod 79, which in turn is actuated by a cam 80, Fig. 4, secured upon shaft 6. Engagement of the cam with the rod transmits sufficient rocking movement to remove the gasket from the annular groove and also to insert it in the annular groove 33 formed in the registering can end.

From the foregoing description it will be seen that the shafts 3, 6 and 13, Fig. 4, and the shaft upon which the feed roller 25 is mounted, continuously revolve while the turrets 11 and 12, together with the several rocker-arms are intermittently operated by the cams and the Geneva movement.

The can-ends supplied by the feeding mechanism 22 are delivered in such a manner that one can-end is deposited in each pocket formed in the turret 12, the can-ends resting on the table 20. As each pocket containing a can-end arrives at the position indicated at 75 a set of rings containing a gasket will also be in registering position to deposit or insert the same in the can-end groove. A continued intermittent movement of the turret 12 will then bring each successive pocket into register with the discharge chute 81 extending under the turntable where the ends drop through the turntable pocket into the chute. Since for one reason or another an end might stick in the pocket, means are provided to insure that the ends are removed from the turntable at that point. This means consists of a rocker arm 82 provided at its outer end with three fingers 83. The arm is operated by the push rod 79 and cam 80 and when the rocker arm is depressed by the push rod the fingers 83 engage the can end and force it out of the pocket into the chute.

Referring to Fig. 1, it will be seen that the strip of conformable material 24, which is intermittently fed by the feed rollers 25 and 26, after passing over the cutter head, is discharged from the machine as a waste strip as circular openings 84 are formed in the strip when the gaskets and center blanks are cut out.

As previously described, the inner blanks 62 are carried by the turret and the suction cups to the position indicated at 60 where they are removed by the shoe 66. Practically speaking, it is necessary to maintain a continuous vacuum in the suction cup to prevent the center blank from falling away from the cup before it reaches the discharging position. Means for maintaining a 180
vacuum in each cup as it passes from the cutter head into the discharging position is shown in Figs. 1, 6 and 16. This mechanism consists of the ring 41 secured on top of the turret 11, and formed in said ring is a plurality of ports 88, one for each set of cutting rings, and each port registers with a pipe 42, which, as previously described, registers with a port 99 connected with an annular groove 88.

Mounted on top of the ring 41 is a segment 89 which remains stationary while the ring 41 intermittently revolves below it. On the under surface of the segment 89 are three aligned grooves 100, 100, and 100, Fig. 16. These grooves are separated from each other by the narrow dividing walls 100 and as the ring 41 turns under the segment the ports 88 are brought successively into register with the three grooves. A hole is formed in the segment over each groove and pipes 88 are threaded into the holes. Attached to these pipes are flexible conductors 90, 91, and 92 which are connected to a vacuum pump P, Fig. 16. The conductor 91 is connected directly to the pump and therefore a vacuum is maintained continuously in the groove 100. Conductors 90 and 92 are connected to the valve 99 and the valve is connected to the pump P by the conductors 94 and 95.

Reciprocally, mounted in the valve 93 is a plunger 96. The plunger is operated by means of an arm 91, Fig. 1, which is actuated by the cam 88 formed on the outer edge of the disk which carries the crank pin 71. The operation of the valve will now be made clear.

When the turn-table has come to rest with one of the sets of cutting rings in register with the cutting head, the valve plunger 96 moves to bring a port into the vacuum cup connected with the two conductors 90 and 95 so that a vacuum is produced in the cup lying over the uncut conformable material. The same movement of the plunger also uncovers a port 102, through which the vacuum previously existing in the groove 100 and conductor 92 is released. The plunger is now in the position shown in Fig. 16, and the conformable material is held up against the vacuum cup by the vacuum existing in the conductor 90 and connected passages. The next stage includes the cutting of the gasket and the rotation of the turntable to the next stage. With this rotation a second port 88 is brought into register with the groove 100, the first one being brought into connection with groove 100. The valve moves again in the direction of the arrow during this rotation to disconnect the conductors 90 and 95 so that the suction cup controlled by the second port is not vacuumized and there is therefore no premature picking up of the gasket material. The vacuum in the first cup, however, is maintained through the conductor 91. This movement of the valve closes the vent 102 and connects the conductors 90 and 92 in the passage 90 so that the groove 100 is also vacuumized. When the turret has come to rest, the valve 96 again moves to position as shown in Fig. 16, so that the vacuum cup over the cutting head picks up a fresh section of the gasket material and the vacuum is in the cup controlled by the groove 100 and conductor 92 is released. The turn-table then moves again to bring a third port into register with the groove 100 as before, the second one advancing into connection with the groove 100 and the first one advancing into connection with groove 100 which in the meantime has been vacuumized by another movement of the valve in the direction of the arrow. When the turn-table stops, the valve moves back to the position shown in Fig. 16, causing the cup over the cutter head (the third cup in the cycle as above set forth) to draw up a new portion of gasket material and the first cup to be open to the atmosphere through the vent 102, thus dropping the blank. The second cup controlled by the conductor 91 is kept vacuumized holding the second blank cut. Successive movements of the turn-table each time bring a new port 88 into connection with the groove 100 and a new suction cup over the gasket material and also move the preceding suction cups ahead one stage. Each time the turn-table comes to rest the valve 96 moves to cause a fresh portion of gasket material to be sucked up against the cutting rings over the cutting head; and simultaneously to release the vacuum in the second vacuum cup ahead so that the blank held thereby is dropped. It should be understood that the vacuum is maintained continuously in the groove 100 and passages connected therewith so that there is no possibility of the blank being dropped prematurely.

By referring to Fig. 2 it will be seen that the lower face of the suction cups and surrounding rings 18 are on a plane just sufficiently high to clear the surface of the material as they swing into position over the strip. For the purpose of preventing the edge of any set of cutting rings from accidently engaging the edge of the strip and possibly tearing or wrinkling same a thin strip of sheet steel 105 best shown in Fig. 9, has been provided. This metal strip overlies the edge of the strip first approached by the cutting rings which are thereby prevented from catching the edge of the strip and tearing or wrinkling the sheet.

While any suitable form of device may be provided for the purpose of delivering individual can-ends to the pockets formed in
the turret 12 a suitable form of device, such as indicated at 22, has been provided. This device consists of an angularly disposed chute 104 to which the can ends are delivered by means of a conveyor belt or other suitable means not here shown. The can ends entering the chute 104 are stacked one on top of the other and they are discharged one by one as the pockets in the turrets 11 and 12 come into register.

The releasing of the lowermost can end is accomplished by the following mechanism: Vially mounted on each side of chute, as at 105, is a lever 106, and secured on each lever is a shoe 107 which shoes are so positioned that they will normally engage the lowermost can end; the levers being normally held together by means of a spring 107a. The levers are, however, intermittently separated sufficiently to disengage and release the lowermost can end to permit it to drop into the registering turret pocket, and this separating of the arms 106 is accomplished by a cam 108 which engages a rocker-arm 110. The outer end of this rocker-arm engages a second rocker-arm 110, to the opposite ends of which are connected links 111, one for each lever 106. As the links 111 are connected to opposite ends of the rocker-arm 110, it will be seen that the movement of one will separate the levers 106 and permit the action described.

The blanks 62 secured from the continuous strip 24 when the gaskets were cut are used when making smaller gaskets for smaller sized cans. These blanks are stacked, as indicated in Fig. 13, between four guide rods 114 and are removed therefrom by one by one by means of a plunger head 115. This plunger head is provided with an offset 116 which is just sufficiently deep to receive one gasket, and a forward movement of the same in the direction of the arrow removes the lowermost blank and moves it into the position indicated at 117 where it is received and held by a suction cup of the turret 11. The plunger head 116 is in this instance operated by the crank pin 72 previously described, and the wiper arm or bell-crank 63 is operated by the same movement (see Fig. 13).

Figs. 12, 13 and 14 are views of the machine shown in Figs. 1, 2 and 5 in which the feeding mechanism just described is used in place of the paper strip feeding device indicated in Fig. 1.

Referring to Fig. 11, it will be seen that the segment 89 is loosely mounted on the ring 41 and is only held thereon by its own weight and the suction produced. The segment is, however, held from traveling with the ring as uprights 89 have been provided which project through guide arms 89.

The starting and stopping of the machine is entirely controlled by a lever 120 which throws the clutch 5 into and out of engagement with the driving pulley 4.

The machine as a whole is comparatively simple in construction and its operation is positively automatic as all movements are timed to cooperate one with the other. Attendant for the successful operation of the machine are not necessary, as the paper, together with the can ends, is automatically delivered and discharged and conveyed to points desired by the conveyor belts shown. We wish it understood that various changes in form, proportions and details of construction may be resorted to within the scope of the appended claims, and that we do not wish to limit ourselves to the specific design and construction here shown.

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

1. A machine of the character described including in combination a rotating turret having a plurality of seats for can ends, a second rotating turret, a plurality of sets of cutting rings for cutting a gasket carried by said second turret, means for operating said turrets whereby the cutting rings are brought into alinement with a can end carried in one of said seats, means cooperating with the cutting rings for cutting a gasket, said gasket being retained by the cutting rings and means for moving the gasket from the cutting rings to the alined can end.

2. In a machine of the character described, a turret, means for delivering conformable material adjacent said turret, means for cutting a gasket from said material and a vacuum cup arranged on said turret to hold said material while said gasket is being cut.

3. In a machine of the character described, a turret, means for delivering conformable material adjacent said turret, means for cutting a gasket and a central blank from said conformable material, and a vacuum cup arranged on said turret to hold said material before cutting and to retain said blank after cutting.

4. In a machine of the character described, a turret, means for delivering conformable material adjacent said turret, means for cutting a gasket and a central blank from said conformable material, a vacuum cup arranged on said turret to hold said material before cutting and to retain said blank, and means for releasing the vacuum in said vacuum cup to release said blank at a predetermined point.

5. In a machine of the character described, a turret, means for delivering conformable material adjacent said turret, means for cutting a gasket and a central blank from said conformable material, said cutting means on
said turret being constructed so as to retain said gasket, and a vacuum cup arranged on said turret to hold said material before cutting and to retain said blank after cutting.

In a machine of the character described, a turret, means for delivering conformable material adjacent said turret, means for cutting a gasket and a central blank from said conformable material, said cutting means on said turret being constructed so as to retain said gasket, a vacuum cup arranged on said turret to hold said material before cutting and to retain said blank, means for discharging said gasket from said cutting means at a predetermined point and means for releasing the vacuum in said vacuum cup to release said blank at a predetermined point.

7. In a machine of the character described, a turret, means for delivering conformable material adjacent said turret, means for cutting a gasket and a central blank from said conformable material, said cutting means on said turret being constructed so as to retain said gasket, a vacuum cup arranged on said turret to hold said material before cutting and to retain said blank, means for discharging said gasket from said cutting means at a predetermined point, means for releasing the vacuum in said vacuum cup to release said blank at a predetermined point, and means for conveying said released blank from said cup to a point without said turret.

8. In a machine of the character described, a turret, a set of cutting rings arranged on said turret, a rotary cutter head mounted adjacent the turret, means for moving the turret to bring the cutting rings into register with the rotary cutter, means for feeding a sheet of conformable material between the cutting rings, a cutter head and the cutting rings, and means for moving the cutter head into and out of engagement with the cutting rings.

9. In a machine of the character described, a turret, a plurality of sets of cutting rings arranged on said turret, a rotary cutter head mounted adjacent the turret, means for moving the turret to bring the sets of cutting rings in succession into register with the rotary cutter, means for feeding a sheet of conformable material between the cutter head and the cutting rings, means for moving the cutter head into and out of engagement with the material to form a gasket said gasket being temporarily retained between the cutting rings.

10. In a machine of the character described, a turret, a plurality of sets of cutting rings arranged on said turret, a rotary cutter head mounted adjacent the turret, means for moving the turret to bring the sets of cutting rings in succession into register with the rotary cutter, means for feeding a sheet of conformable material between the cutter head and the cutting rings, means for moving the cutter head into and out of engagement with the material to form a gasket said gasket being temporarily retained between the cutting rings.

11. In a machine of the character described, a turret, a set of cutting rings arranged on the turret, a rotary cutter head mounted adjacent the turret, means for moving the turret to bring the cutting rings into register with the rotary cutter, means for feeding a sheet of conformable material between the cutter head and the cutting rings, means for moving the cutter head into and out of engagement with the cutting rings, means for discharging said gasket and said blank from said turret at predetermined points.

12. In a machine of the character described, a turret, a set of cutting rings arranged on the turret, a rotary cutter head mounted adjacent the turret, means for moving the turret to bring the cutting rings into register with the rotary cutter, means for feeding a sheet of conformable material between the cutter head and the cutting rings, means for holding the material against the cutting rings and means for moving the cutter head into and out of engagement with the cutting rings.

13. In a machine of the character described, a turret, a plurality of sets of cutting rings carried by the turret, a suction cup within each set of cutting rings, a cutter head mounted adjacent the turret, means for revolving the turret to bring each set of cutting rings successively into register with the cutter head, means for feeding a sheet of conformable material between the cutter head and a registering set of cutting rings, means for producing a vacuum in the suction cup of the registering cutting rings to hold said material against the rings, and means for moving the cutter head into and out of engagement with the cutting rings.

14. In a machine of the character described, a turret, a plurality of sets of cutting rings carried by the turret, a suction cup within each set of cutting rings, a cutter head mounted adjacent the turret, means for revolving the turret to bring each set of cutting rings successively into register with the cutter head, means for feeding a sheet of conformable material between the cutter head and a registering set of cutting rings, means for producing a vacuum in the suction cup of the registering cutting rings to hold the material against the rings, and means for moving the cutter head into and out of engagement with the cutting rings.
for moving the cutter head into and out of engagement with the registering set of cutting rings, and means for maintaining a vacuum in each suction cup during a portion of the movement of said turret.

15. In a machine of the character described, a turret, a plurality of sets of cutting rings carried by said turret, a second turret, means for delivering can-ends to said second turret, a cutter head mounted adjacent to the first turret, means for revolving said first turret to bring the cutting rings successively into register with the cutter head, means for feeding a sheet of conformable material between the cutter head and a registering set of cutting rings, a suction cup within each set of cutting rings to hold the material against the rings, means for bringing the cutter head and the cutting rings into operative relation to cut a gasket and a central blank, means for removing the central blank, and means for inserting the gasket in a can-end.

16. In a machine of the character described, a turret, a plurality of sets of cutting rings carried by said turret, a second turret, means for delivering can-ends to said second turret, a cutter head mounted adjacent to the first turret, means for revolving said first turret to bring the cutting rings successively into register with the cutter head, means for feeding a sheet of conformable material between the cutter head and a registering set of cutting rings, a suction cup within each set of cutting rings to hold the material against the rings, means for moving the cutter head into engagement with the cutting rings to cut a gasket and a central blank from said material, means for relieving the suction in the suction cups to release the central blank, a wiper arm for removing the blank, and means for inserting the paper gasket in a can-end.

17. In a machine of the character described, a turret, a plurality of sets of cutting rings carried by said turret, a second turret, means for delivering can-ends to said second turret, a cutter head mounted adjacent to the first turret, means for revolving said first turret to bring the cutting rings successively into register with the cutter head, means for feeding a sheet of conformable material between the cutter head and a registering set of cutting rings, a suction cup within each set of cutting rings to hold the material against the rings, means for bringing the cutter head and the cutting rings into operative relation to cut a gasket and a central blank, means for removing the central blank, and means for inserting the gasket in a can-end, and means for operating the knock-out ring.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

HUGO W. STARK.

WILLIAM KNUTS.

Witnesses:

W. W. HEALEY,

M. E. EWING.