This invention relates to containers such as pails, barrels, drums, or the like, having full open tops with removable heads or covers, and in particular directed to novel means for fastening such heads or covers in position. Closing rings for fastening such covers are now commonly in use and some of such rings are provided with quick operating closing levers or closing means positioned within the rings. These closing devices have been found advantageous but when the ends of the ring are provided with inwardly projecting lugs for the closing apparatus it has been found difficult to properly draw in the extreme ends at the final closing or tightening position inasmuch as there is a tendency to spring the ends of the ring outwardly due to the tension on the inner portions of the lugs.

One of the objects of the present invention is to provide improved means for fully closing the rings and drawing the ends inwardly or toward the center. The covers are usually provided with gaskets and it is desirable to provide means for lightly fastening the covers in position when they are shipped from the container factory to the user to prevent undue pressure on the gaskets, the closing means also being arranged to fully close or tighten the rings for shipping purposes or the like.

Another object of the present invention is to provide novel means for such variable closing positions.

Other objects and advantages will appear more fully from the following description taken in connection with the accompanying drawings, in which—

Fig. 1 is a plan view of a portion of a container with the closing device in temporary or lightly closed position and with parts broken away for convenience in illustration;

Fig. 2 is a similar view showing the ring spread to open position;

Fig. 3 is a similar view showing the ring in tightened or completely closed position;

Fig. 4 is a sectional detail taken on the line 4—4 of Fig. 1;

Fig. 5 is a sectional detail taken on the line 5—5 of Fig. 1; and

Fig. 6 is a plan view showing a modification.

A barrel or container 1 as shown in the drawing is provided with a beak 8 and cover 9. The cover has a rim 10 that fits within the open top of the container and is provided with an outwardly projecting flange 11 that lies over the gasket 12. This is illustrative of the usual construction of containers of this type. The ring 13 is of the split contractible type and channelled in cross section to engage with the beak and flange for fastening the cover in position. One end 14 of the ring has an inwardly extending lug or projection 15 and the opposite end 16 of the ring has a somewhat similar lug or projection 17. A closing lever 18 is pivoted at 19 to the projection 15 and is preferably curved to fit within the ring and may be provided with any suitable catch or fastening means (not shown). A link or arm 20 is pivoted at 21 to the lever 18 at a point adjacent to the pivot 19. This arm comprises an upper link or bar 22 and a lower link or bar 23. The free or outer ends of these link members are connected by a pivot 24 and is best shown in Fig. 4. This pivot has an enlarged portion 25 at one end and a smaller portion 26 at the other end, these two portions being separated by an annular flange 27 of slightly larger diameter than the larger portion 25.

The lug or bracket 17 has a peculiarly shaped recess or opening 26, one portion 28 being substantially circular and of slightly larger diameter than the flange 27. This hole or opening has a slot 30 extending to the outer edge of the bracket and somewhat inwardly or toward the center of the container. This channel is slightly greater in width than the diameter of the smaller section 26 of the pivot 24; but is less in width than the diameter of the larger section 25.

The opening 28 has a lateral extension or notch 31 which is preferably of substantially semi-circular form, the center being on the same circumferential line as the center of the hole 29, or substantially on a line between the center of the hole 29 and the pivot 19 when the parts are in closed position. This extension or notch is slightly larger than the smaller portion 28 of the pivot 24 so that this portion may fit or engage therewith.

The lower link or bar 23 is in general in the form of a double cam or contact member having a cam or face portion 32 arranged adjacent to the outer end for contact with the inner surface of the rim or wall 10 of the cover when in closing position, as shown in Figs. 1 and 6; and also has a projection or extension 33 that projects beyond the opposite end of the link member 22 and engages with the rim or wall 10 during the final closing movement.

The link 20 may be slightly bent or held so that the outer or free end will be biased or tend to urge the pivot 24 to cause the larger portion 25 to engage with the opening 26, or other means provided for this purpose. In the arrangement
shown, a spring 34 is secured at one end 35 to the link or cam member 23 and presses against the lower surface of the bracket 17 as shown in Fig. 5, thus tending to swing the outer end of the link downward.

When the ring is to be fastened in slightly open position as shown in Fig. 1, the small diameter portion 26 of the pivot 24 is brought into engagement with the notch 31 and the ring closed in the usual manner. This holds the cover somewhat lightly in position without undue pressure on the gasket, which is undesirable for shipping the empty containers. When the container is to be filled the lever 18 is swung to opening position as shown in Fig. 2, at which time the pivot 24 engages with the hook-like outer portion of the opening 28 so that the ring may be forced open in the event of sticking or the like. After the container has been filled, the pivot is shifted in the opening 28 to bring the enlarged portion 25 into the hole 29 as shown in Fig. 3, and when the ring is closed with the pivot in this position the ends will be drawn close together as shown, thus making the desirable tight closure. The spring 34 will tend to hold the end of the link with the pivot in the last-named position so that it will automatically move into this position upon the opening movement and there is little liability of the operator inadvertently failing to properly close the container. Furthermore, when the enlarged portion 25 of the pivot is in the opening 29 it cannot pass out through the slot 30 and consequently the closing parts will be held in convenient position for operation.

During the closing movement the cam or edge 32 will engage with holes in the rim or outer wall 16 and this will first tend to cause the ends 16 of the ring to be drawn in against the head and flange while the opposite end 14 is still somewhat free for circumferential movement. Thereafter, or at substantially the final closing movement, the projection or cam 33 will engage with the rim 18 so that at the final closing, both cam faces or projections 32 and 33 are in engagement with the rim and serve as fulcums or abutments whereby both of the ends of the ring are swung inwardly or toward the center of the container to make a tight closure or fit. I have found that this duplicate drawing in or closing action is particularly desirable for barrels, drums, or the like, where considerable force is necessary to contract the ring to its final closing position.

I am aware that it has heretofore been proposed to provide a plurality of notches or recesses in one of the brackets or lugs to permit pivotal engagement with the link at different points to provide for different circumferential positions of the ring when closed but I have found that it is objectionable to have such notches at different distances from the ring as it changes the closing action and furthermore such notches are apt to permit the pivot to slip out of place during shipment and may also serve to improperly close the ring due to the operator falling to utilize the proper notch all of which objections being avoided by my novel arrangement in which the pivotal points in the bracket are substantially in alignment or at the same distance from the ring so that the bending moment on the bracket is the same regardless of the different fastening position.

In the form above described it will be noted that the link is detachably secured to the coacting bracket but in Fig. 6 I have shown a modification in which the lever 36 is pivoted at 37 to one bracket 38 and the link 33 is pivoted at 49 to another bracket 41. In this form the pivot 42 which is the same as the pivot 24, coacts with a hole or opening 43 in the lever 36 in the same way as above described. This arrangement of course provides for the variable closing positions of the ring.

While I have shown and described preferred embodiments of my invention it will be apparent that changes may be made in the arrangement of parts or details of construction in order to adapt the same to different materials, and therefore I do not wish to be limited to the particular construction described except as specified in the following claims, in which I claim:

1. A closing ring of the character set forth, including a lever having a pivotal connection with one end of the ring and a link having pivotal connection with the lever adjacent to said pivotal connection, a bracket on the opposite end of the ring having intersecting openings of different sizes, and means at the free end of the link for engagement with said openings, said means having portions adapted to fit in the different sized openings in the bracket whereby the connection point between the link and the bracket may be positioned at varying distances from the end of the ring.

2. The combination with a contractible split closing ring having brackets extending inwardly from the ends thereof, of a closing lever pivoted to one of said brackets, a link pivoted to the closing lever adjacent to the first-named pivot, a pivot secured to the outer end of the link and having portions of different diameters, said last-named bracket having intersecting holes therethrough, the centers of which are substantially in alignment with the center of the link when the ring is closed, said holes being of different diameters corresponding with the different diameters of the pivot and adapted to be engaged by the respective portions of the pivot to vary the pivotal connection of the link with the last-named bracket.

3. The combination with a container having a cover with a wall portion fitting in the container and a flange extending outwardly over the container head, of a split contractible channel shaped closing ring for engagement with the flange and head, a bracket extending inwardly from one end of the ring, a closing lever pivoted to said bracket, a link formed of two bars pivotally connected to the lever adjacent to the first-named pivot, a bracket extending inwardly from the opposite end of the ring and having a hole therethrough with a channel opening to the edge of the bracket which is smaller than the hole, and a recess opening into the hole on the side toward the opposite bracket, a pin secured to the outer end of the link and having one portion between the ends of the bars of less diameter than the hole and adapted to engage therewith, and having a reduced portion of substantially the same diameter as the width of the channel and the width of the recess, said pin also having an annular flange between the end portions of substantially the same diameter as the hole but adapted to pass freely therethrough, and a spring tending to press the end of the link to the engaging position for the portion of the pin having the flange.

4. The combination with a closing ring of the character set forth, having inwardly extending projections adjacent to the ends, a lever pivotally connected with one of said projections,
and a link connecting the lever with the other
projection, of cam means coating with the link
and having one portion adjacent to the outer
end of the link which engages first with the rim
of the cover and another portion extending a
short distance beyond the opposite end of the
link for engagement with the rim of the cover
adjacent to the pivot between the link and the
lever at the final closing movement whereby
both ends of the ring will be drawn inwardly
when the ring is closed.

5. A split closing ring for containers, having
a lever pivoted at one end of the ring and a link
having a pivotal connection with the other end
of the ring and with the lever and adapted to
draw the ends of the ring toward each other
when the lever is swung to closing position, and
means on the link having one portion interme-
diate the ends of the link which contacts the
cover adjacent to one end of the ring and an-
other portion extending beyond the end of the
link which is pivoted to the lever and which
contacts the cover adjacent to said end of the
link, said portions adapted to engage with a por-
tion of the cover of the container for drawing
both ends of the ring inwardly when the ring
is drawn to closed position.

6. The combination with a split contractible
closing ring having brackets projecting inwardly
from the ends thereof, of a closing lever piv-
отed to one of said brackets, the other bracket
being provided with an opening formed of inter-
secting holes of different diameters, the centers
of which are at approximately the same distance
from the ring, a link pivoted to the lever and
having a pin with portions of different diam-
eters for adjustable engagement with the holes
in the last-mentioned bracket, means tending to urge
the last-named end of the link to one engag-
ing position for the pin, a cam-like projection
on the link adjacent to the outer end thereof
for engagement with the inner rim of the con-
tainer cover to draw the adjacent end of the
ring inwardly when it is closed, and a cam-like
extension on the link extending beyond the pivot
connecting the same with the lever, which en-
gages with the rim of the cover during the final
closing movement to draw the adjacent end of
the ring inwardly.

VICTOR H. SEVERY.