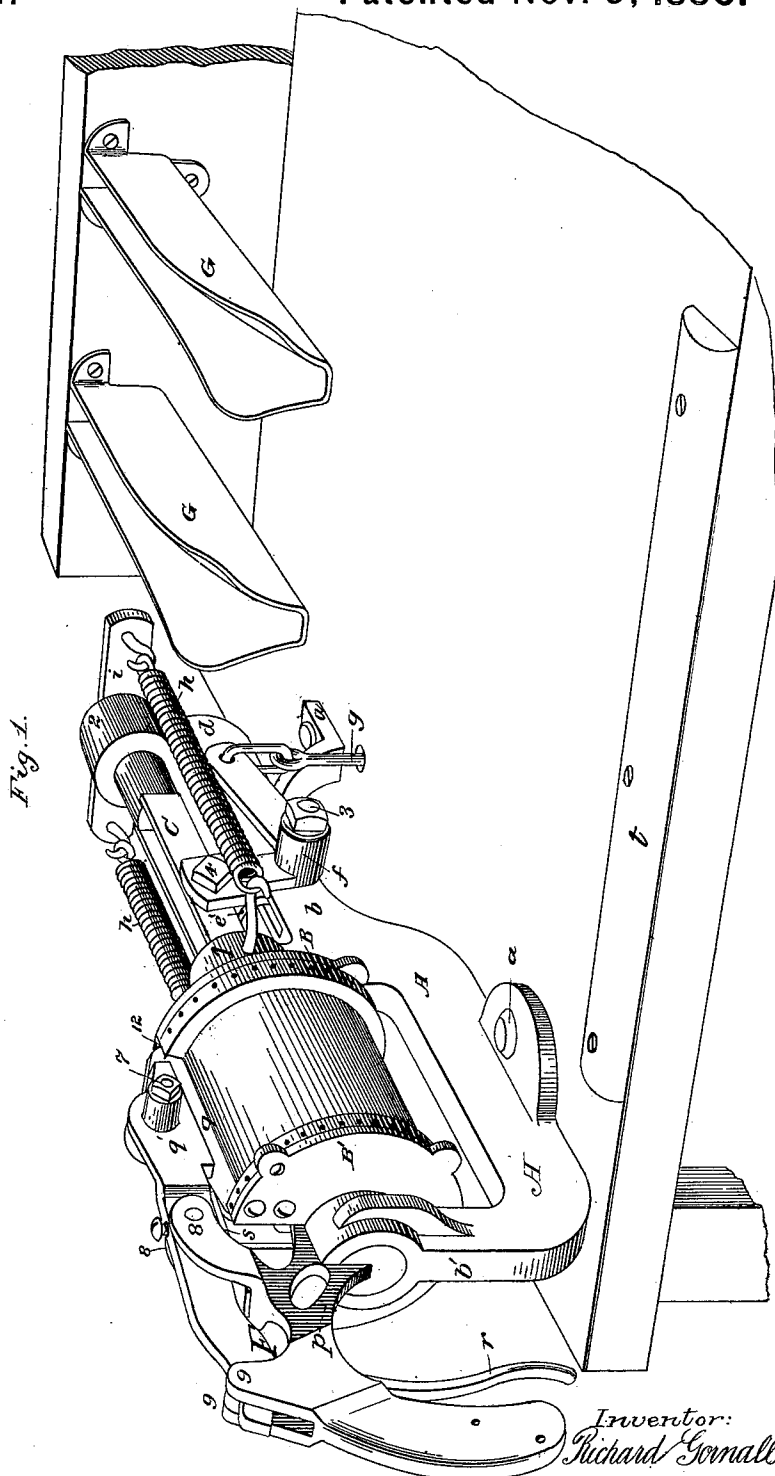


(No Model.)

3 Sheets—Sheet 1.

R. GORNALL.
Gaging and Side Seaming Can.
No. 234,271. Patented Nov. 9, 1880.



Attest:

R. F. Barnes.
Warren Seely.

Inventor:

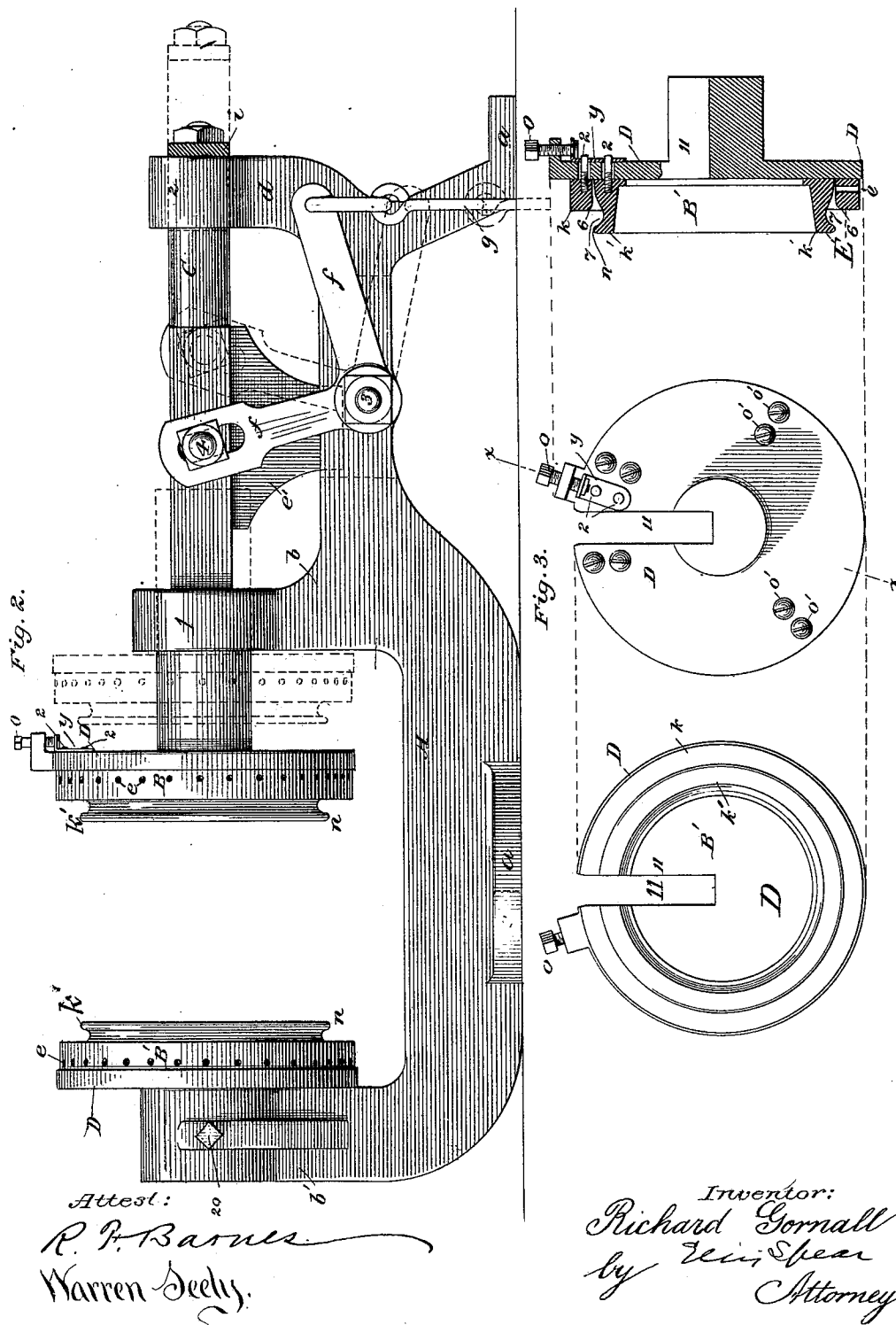
Richard Gornall

by E. W. Spear
Attorney

(No Model.)

3 Sheets—Sheet 2.

R. GORNALL.
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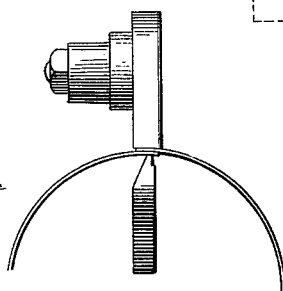
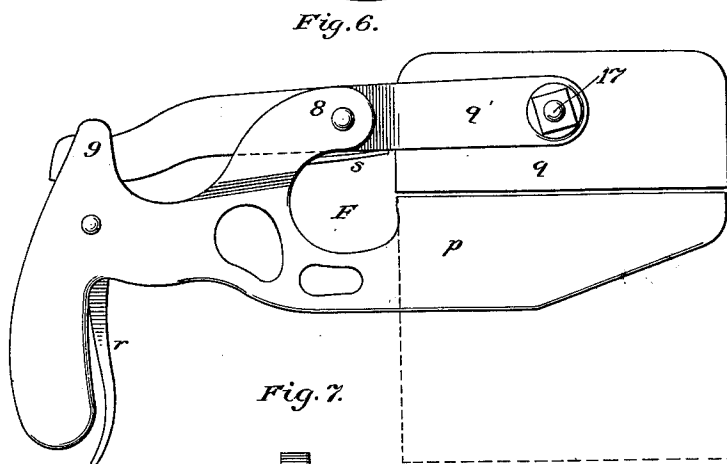
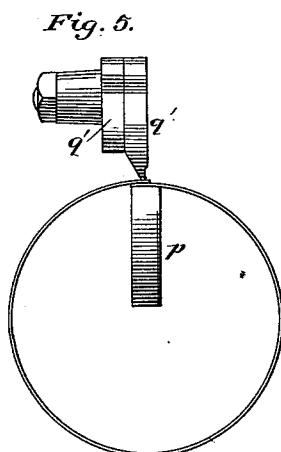
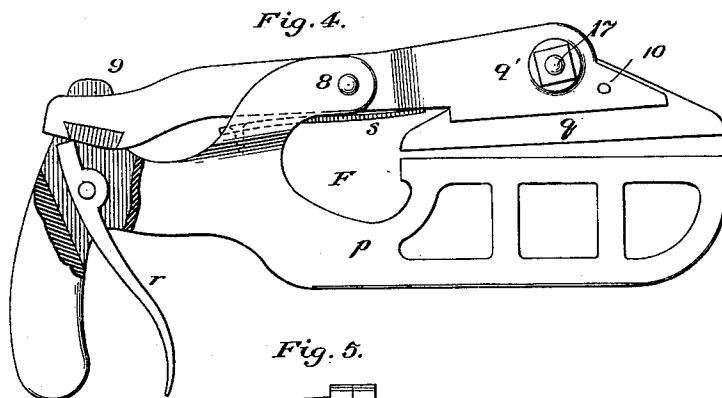
Attest:
R. P. Barnes
Warren Seely.

Inventor:
Richard Gornall
by Wm. Spear
Attorney?

(No Model.)

3 Sheets—Sheet 3.

R. GORNALL.
Gaging and Side Seaming Can.
No. 234,271. Patented Nov. 9, 1880.



Attest:

R. P. Barnes
Warren Seely.

Inventor:

Richard Gornall
by Eli Spear
Attorney

UNITED STATES PATENT OFFICE.

RICHARD GORNALL, OF BALTIMORE, MARYLAND, ASSIGNOR TO HIMSELF
AND CHARLES E. DICKEY, OF SAME PLACE.

GAGING AND SIDE-SEAMING CANS.

SPECIFICATION forming part of Letters Patent No. 234,271, dated November 9, 1880.

Application filed August 26, 1880. (No model.)

To all whom it may concern:

Be it known that I, RICHARD GORNALL, of Baltimore city and State of Maryland, have invented a new and useful Improvement in Gaging and Side-Seaming Cans; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has for its principal object, first, to secure uniform external diameter of the can-body under all circumstances, and without regard to the thickness of the sheet metal; second, to provide adjustability in the gaging mechanism, whereby such mechanism may be varied within narrow limits to meet the requirements of different manufacturers.

Heretofore in side-seaming cans it has been customary to place the seam or body blank by hand upon a solid cylindrical block or gage, and to hold it there until the knife should be brought down to clamp it. The body-blank being thus placed on the block and pressed thereon and held by the force of the hand, it has been found in practice impossible to secure perfect accuracy, the workmen sometimes pressing with greater and sometimes with less force, and thus bringing the blank with greater or less closeness upon the block. Further, as the block served to determine only the interior diameter of the can-body, the exterior necessarily varied with the thickness of the sheet metal.

There has been another prolific source of inequality in the can-bodies made by apparatus hitherto used—namely, the accumulation of resin upon the block on which cans were both gaged and seamed. The cans being clamped by a knife-edge and soldered upon the block, it was impossible to prevent the melted resin from running down upon the block and adhering thereto, and thereby slightly increasing the size of the blocks, and consequently the size of the can-bodies.

It has been sought to remedy the irregularity arising from the hand-pressure by using end clamps to hold the body-blank while soldering; but this has been found entirely impracticable by reason of the resin filling the groove in the clamp.

Can-bodies thus varying in exterior diameter are, as is well known, often difficult to se-

cure to the heads. They may fit loosely, and thereby require more solder, or too closely, and require the exertion of force, and therefore more time and skill to press them into the flange of the head. Those fitting too loosely and requiring an unusual amount of solder are specially objectionable, where the more recent top and bottom seaming machinery is used, the operation of such machines with such unequally-fitted cans requiring close watching, slow movement, and often the introduction of additional solder to the can, in order to render the seam secure where the parts fit loosely.

The invention whereby I have sought to remedy these defects consists, first, in a gaging mechanism formed of two chucks, (without a central block,) one fixed and the other movable, each having an annular groove for the reception of the end of the body-blank, the said annular groove being made with its outer face cylindrical and its inner face conical, whereby the exterior diameter of the can is determined without regard to the thickness of the metal.

It consists, in the second place, in making the annular rings which form said annular grooves in the clamps adjustable in diameter, so as slightly to enlarge or diminish the diameter of the can-body, as may be required by the user.

It consists, in the third place, in an independent griper, whereby the can-body may be removed from the gage and afterward soldered, so that no resin can come in contact with the gage.

It consists, finally, in certain details of construction, described hereinafter in connection with the leading features, and particularly indicated in the claims.

In the accompanying drawings, Figure 1 represents, in perspective, the gage in place upon the table, with griper in position. Fig. 2 is a side elevation of the gage. Fig. 3 represents, respectively, a front, rear, and section of the front chuck, the right hand being a section on line *xx* of the central view. Fig. 4 is a side elevation of the griper; Fig. 5, an end view of the same, with the body-blank clasped therein. Figs. 6 and 7 show a modification of the griper adapted for inside seaming.

The frame of the gage is represented at A. It may be made of cast-iron or any other suit-

able material, and is provided with ears *a*, or some equivalent device, for connecting it to the bench. The gage is arranged on the bench, as shown in Fig. 1.

Arms *b b'* support two chucks, B B', between which the body blank or "seam" is clamped. Of these chucks, that nearer the workmen (marked B') is supported on the arm *b'* by means of a stem passing through said arm and held adjustably by set-screws 20. This allows the fixed chuck to be moved to adjust the size of opening between the two. The other is mounted on a shaft, C, which is supported at one end in an eye, 1, on the arm *b*, and at the other in a smaller eye, 2, on the rear extension, *d*, of the frame A. The shaft C slides freely back and forth, carrying the chuck B sufficiently far to admit the body-blank into the open space between the two chucks. This shaft may be round or square. If made round, for convenience of fitting, I provide it with an arm, *e'*, the end of which slides in a groove in the rear extension of the frame A, and prevents the shaft from turning.

A bell-crank lever, *f*, is pivoted on the frame at 3, and is connected to the shaft C by pivot at 4. A rod, *g*, connects the horizontal end of the bell-crank lever with suitable treadle, adapted to be operated by the foot of the workman.

Springs *h h* are attached to hooks upon the standard or arm *b*, and are stretched to like hooks on a bar, *i*, fixed on the rear end of the shaft C. These springs hold the movable chuck B firmly against the end of the body-blank when said blank is in place.

Obviously, the action of the bell-crank lever is against the tension of the springs, and serves to thrust back the shaft and its chuck and open the apparatus for the reception of the body-blank.

The peculiar formation of the chucks is represented in Fig. 3.

D is a disk, preferably of cast-iron, a little larger than the size of the can to be soldered. It is fixed to its proper support, (described above,) and to it is attached the gage-ring E. This ring is composed of an inner and outer part, *k k'*. The outer is plain, with a cylindrical inner surface, except where it is slightly beveled off to admit easily the blank, as shown at 6, Fig. 3. The outer surface of the inner part is inclined or formed with an ogee surface, as shown in section at 7, on the right of Fig. 3. The two parts *k k'* are fitted to each other at the back, and form, practically, one. The groove is approximately of half-wedge shape in section, with one side parallel with the side of the can and the other inclined therefrom. It will be understood that both chucks are alike in respect to this groove.

The ring E being made of the proper size and properly adjusted, it will be obvious that when the body blank or seam is introduced in order to be gaged for soldering, and the springs allowed to force back the movable chuck, the

edge of the sheet metal will move up on the inclined surface of the inner part until it comes against the inner surface of the outer part, which is the limit of its motion.

The wedge shape of the groove, caused by the incline on the inner part, adapts the apparatus to any thickness of the sheet metal. The inner surface of the part *k* being cylindrical in form determines the outside diameter of the can-body, whatever the position of the chuck after entrance of the blank; but the chuck must move toward the blank sufficiently to bring the inclined surface into contact with the metal, and this movement will depend upon the thickness of the metal. For this form, however, it is essential to provide some means for keeping the groove free from the dust always flying in greater or less quantities about the shop. To accomplish this I bore radial holes *e* in the outer part, close enough to allow them to run into each other as they enter the rear edge of the annular groove. This affords egress for any dust which may be pushed into the groove.

To prevent, as far as possible, the dust from being pushed back by the edge of the sheet-metal as it moves over the conical surface of the inner part, the lower part of this surface is in the form of a groove. The tendency of the dust is to drop into this groove, and thus escape being pushed back to clog the gage. I make the flange *n* on the edge of this groove a trifle smaller than the larger diameter of the inner part of the ring, and also extend it beyond the outer part. Thus extended it serves as a guide for the body-blank when put in place by the operator.

The adjustability of the ring E in diameter is necessary in order that it may be expanded or contracted within limits sufficient for the purpose of setting the gage for the small differences in the same grades of cans as made by different manufacturers. The ring E is fixed to the disk D by means of screws *o'*, which pass through slots or slightly-enlarged holes in the disk D into the inner and outer parts of the ring E. These, or part of them, being loosed, the ring (which is cut as shown in Fig. 3 to admit the griper) may be sprung slightly out by means of the pins 22, which pass through slots in the disk D and project into a plate, *y*. This plate may be drawn outward by a screw, *o*, passing through a threaded hole in the ear on the edge of D, and connected by a head to the plate. Obviously, only slight movement of the chuck is required for the introduction or removal of a blank. The chuck should be removable from the frame in order that different sizes may be used for the different sizes of cans. The fixed chuck may be removed by simply loosening the set-screws 20. The movable chuck may be fixed on the end of its bar or shaft by a nut or screw on the inside of disk D, on the removal of which the chuck may be taken off.

The mechanism above described relates to

the gaging of the can-bodies; but the construction which leaves an open space between the chucks is adapted also to that feature of my invention which relates to the separate soldering of the seams.

The accurate working of the apparatus is impaired, as heretofore stated, by the resin accumulating in parts of the instruments. This defect I have remedied by performing the soldering apart from the gaging mechanism. To accomplish this I provide a griper, F, (shown in Fig. 1 as applied to the described gaging apparatus, and in Figs. 4, 5, and 6 detached therefrom.) This griper is formed of a lower blade, *p*, made preferably of the same piece with the handle, and an upper blade pivoted and movable thereon. The handle is bent downward at approximately right angle to the blade. The lower blade is made thicker than the upper, and slightly rounded across its edge to conform to the shape of the inner surface of the can. The upper blade is made in two parts—a blade proper, *q*, and lever *q'*, to which it is pivoted at 17. The lever is pivoted between two ears, 8, and the rear end passes between two other ears, 9. In a slot in the upper part of the handle is pivoted a trigger, *r*, the upper end of which acts as a cam to lift the end of the lever resting thereon, and thus press the upper blade upon the lower. The upper blade is lifted when the trigger is pressed forward by means of a spring, *s*. The blade proper has a slight motion upon its pivot 17, but is limited by a pin, 10, passing through the lever into a slot in said blade. This causes the blade to open widest at the forward end, or that farthest from the handle, which makes it easier to place upon the body-blank.

In order that this griper may be used with the gaging apparatus, I slot, as before explained, the ring E and the front chuck, B', as shown at 11, so that the lower jaw of the griper may be slipped longitudinally through the front chuck and through both parts of the ring under the tin far enough to fully grasp it upon the lap. In order that the body-blank may be in proper position to be grasped by the griper with a sufficient margin of the outer lap exposed, I make a notch, 12, on the upper edge of the rear chuck, B', in proper place to indicate the position of the blank. After the can-body has been gaged, and while it is held between the chucks, the operator inserts the griper, seizes and withdraws the body-blank, holding it, as above described, with the lap exposed on one side of the upper jaw, and resting upon the wider surface of the lower jaw, as shown in Fig. 5. The end of the trigger, which presses against the end of the lever of the upper blade, is adapted to move far enough upon said lever to lock the blade down, and firmly clamp the blank by the time the tail of the trigger strikes the handle. The operator, as soon as he has thus firmly gripped the blank, withdraws it, and places it upon a trough-shaped support, G,

which is fixed to a standard on the opposite side of the table. This support is open at the front, and is adapted to receive the lower jaw of the griper, and to hold the griper and blank with the overlap uppermost, ready for the soldering-iron wielded by the workman, who stands on the opposite side of the table and passes the iron over the tin while it is upheld by the lower jaw. The griper-support may be placed in an inclined position, if preferred by the workman. The flared mouth permits the ready entrance of the griper, which may be handled with rapidity, and does not require skilled labor. Two of these can-supports should be provided, and as many gripers, so that one may be left in the support for the soldered, while the other is used to gripe another can-body. The upper jaw of the griper is made slightly arched from end to end, as usual with blades used for like purpose. The tail of the trigger extends a little below the end of the handle of the griper, so that, as the griper is drawn back from the support on the table, the end of the trigger strikes a bead, *t*, and is thereby thrown forward, and releases the jaw, which opens to receive another can-body.

By means of the apparatus above described the labor of gaging and soldering is divided, one workman (who may be a boy, as little training is required) gaging and placing the gaged cans, securely clamped, before another, whose sole duty is to solder; but the greatest advantage arises from the accurate gaging, regardless of the thickness of metal, and the entire freedom from any irregularity due to adhesion of resin upon any part of the gaging apparatus, or any lack of uniformity of pressure when such pressure is applied to the body-blank directly by the hand.

Manifestly, the griper may be used with greatly-different forms of gaging apparatus, and I do not limit myself either to any special form of the gaging mechanism or to the special form of griper, provided that the griper be adapted to be inserted into the slotted gaging-chucks and to take hold of the body blank or seam after it has been gaged and while held by the said gaging mechanism. The griper, too, may be adapted, by slight change of form, to operate for inside as well as for outside seaming. Such a modified form is shown in Figs. 6 and 7. The only change required is, that the outer or moving part is made thicker to form the support for the blank when pressed by the iron, while that which was the under part in the first form is made thinner, too, as a blade. It is slipped into the gage mechanism in the same way as heretofore described.

Having thus described my invention, what I claim is—

1. A gaging mechanism consisting of chucks having grooves adapted to gage the body-blank on the outside thereof, said chucks being combined with mechanism whereby they may be separated for inserting or removing

the blank, and also being slotted to admit a griper, substantially as described.

2. The combination of the expansible rings, whereby the size of the can may be varied, with the chucks of a gaging mechanism, substantially as described.

3. The combination, in a gaging apparatus, of a fixed chuck provided with a ring, E, having the cylindrical and inclined surfaces, with a movable chuck provided with corresponding ring and interior surfaces, said chucks being adapted to receive and gage the body-blanks of cans, and being provided with openings whereby said body-blanks may be griped when gaged, as described.

4. The combination, with the outer cylindrical part, *k*, of the inner inclined part, *k'*, having groove and flange *n*, substantially as described.

5. A gaging mechanism consisting, essentially, of the grooved chucks, as described, adapted to gage and hold the body-blank,

having openings to admit a griping mechanism to the body-blank when held in said chucks, in combination with a griper adapted to enter the chuck and clamp and hold the body-blank for soldering, substantially as described.

6. The combination, in the griping mechanism, of the lower jaw having a handle rigid therewith, of the lever *q'*, pivoted on said lower jaw, of the blade *q*, pivoted upon the lever, and a locking-trigger extending below the end of the handle, substantially as described.

7. The combination, with a suitable standard on the table, of the support G, of trough shape, fixed at the rear end to said standard and open at the front, as described.

In testimony whereof I have signed my name to this specification in the presence two subscribing witnesses.

RICHARD GORNALL.

Witnesses:

WM. H. ROBERTS,
JOHN F. COOK.