

No. 742,391.

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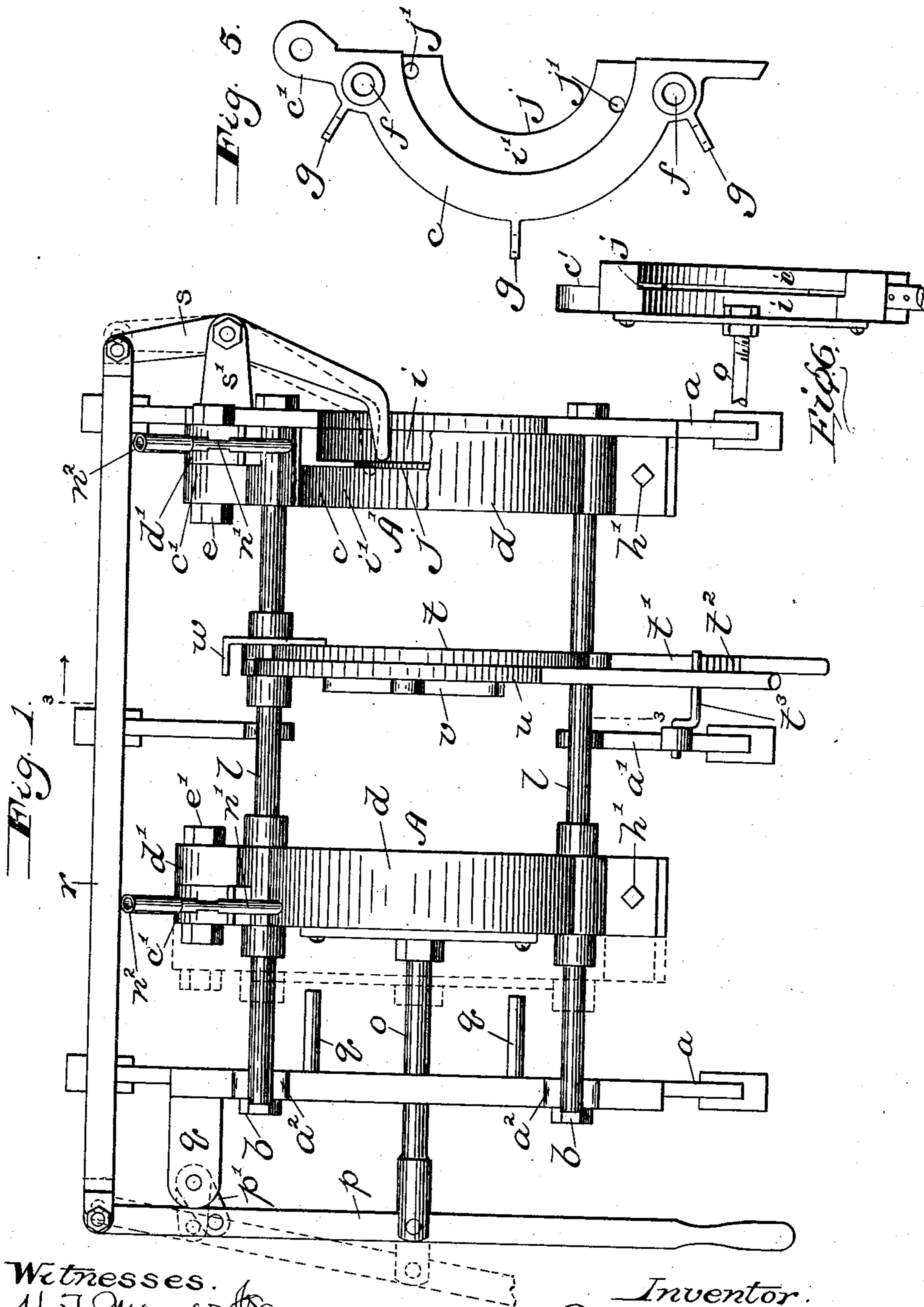
C. J. CARROLL.

MEANS OR APPARATUS FOR RECLAIMING THE SHEET METAL OF CANS.

APPLICATION FILED OCT. 16, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses.  
H. J. Meyer, Jr.  
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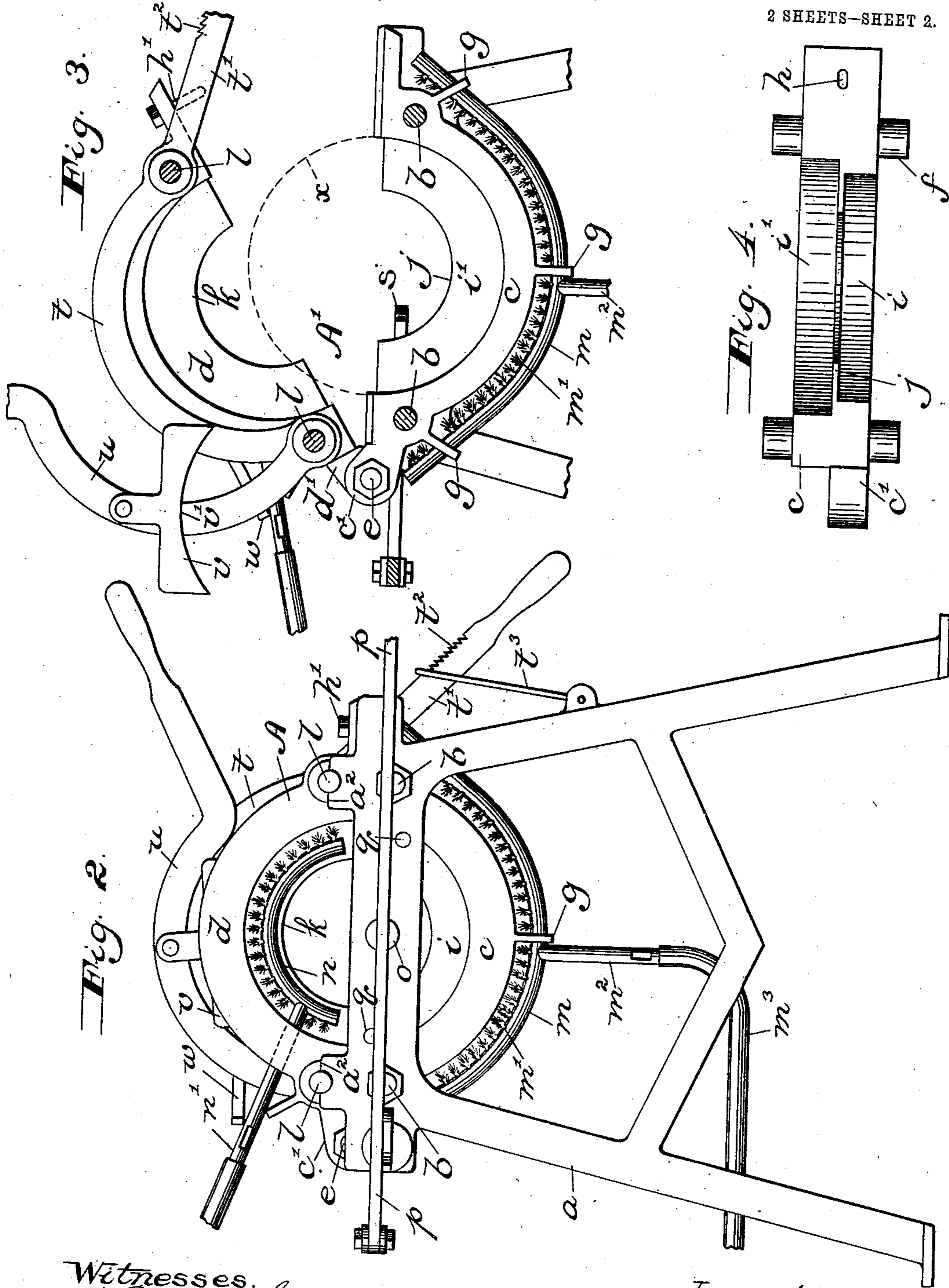
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# UNITED STATES PATENT OFFICE.

CHARLES J. CARROLL, OF BALTIMORE, MARYLAND.

MEANS OR APPARATUS FOR RECLAIMING THE SHEET METAL OF CANS.

SPECIFICATION forming part of Letters Patent No. 742,391, dated October 27, 1903.

Application filed October 16, 1902. Serial No. 127,513. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES J. CARROLL, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Means or Apparatus for Reclaiming the Sheet Metal of Cans, of which the following is a specification.

One of the objects of this invention is to provide an apparatus for disjoining the parts of sheet-metal packing and storing vessels that have been once used for their original purpose, as cans or receptacles, whereby to reclaim the sheet metal, such as tin, which has heretofore ordinarily been wasted, so that portions of it may be utilized again as a receptacle or utilized in various other arts.

A further object of the invention is to provide an apparatus of this character whose mode of operation is to effect the disjunction of the parts of a can by the action of heat, so that the entire amount of unutilized sheet metal originally used in the can will be reclaimed; and a further object is to provide such an apparatus that will also effect the reclamation of the solder used to hold the parts together when the can was formed.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a top plan view of the apparatus with a part partially broken away to better illustrate the construction of a subjacent part. Fig. 2 is an end view. Fig. 3 is a vertical transverse section taken approximately on the line 3 3 of Fig. 1 looking in direction of dart. Figs. 4 and 5 are respectively detail inside edge and side views of one part of the can-holders. Fig. 6 is a detail view illustrating the connection between the movable can-holder and its operating-rod.

The framework of the apparatus comprises end standards *a* and an intermediate standard *a'*, which latter may be dispensed with, if desired, said standards being firmly secured together by horizontal stays or tie-bolts *b*. Mounted in this framework is a can-supporting device comprising two approximately circular can-holders *A A'*, each of which consists of a lower and upper semi-circular yoke *c d*, provided at one end with knuckles *c' d'*, through which extend pintles *e e'*, whereby the upper yokes are pivoted to

the lower yokes, so that they may be swung down upon the latter, as illustrated in Fig. 2, to hold the can, and be also swung up, as illustrated in Fig. 3, to receive another can. The two lower yokes *c* are provided with holes *f*, through which the tie-bolts *b* extend, and are also provided with depending apertured ears *g*, for a purpose hereinafter set forth, and at their free ends with a socket *h*, adapted to receive the pins *h'* on the free ends of the upper yokes. Two semicircular recesses *i i'* are formed in each yoke and are separated by a correspondingly-shaped flange *j*, the said flange of one yoke being formed with apertures *j'*, extending therethrough. The two upper yokes *d* also are provided with two semicircular recesses and a flange *k*, complementary to the similar parts of the lower yokes, and said upper yokes are connected, so as to swing together, by means of two rods *l*, passing through holes in the said yokes and adapted to rest at one end in bearings *a<sup>2</sup>* on one standard when the yokes are swung down to close the holders.

In the apertured ears *g* of the lower yokes *c* is supported a heating device in the form of a curved burner *m*, having a plurality of jet-orifices *m'* and to which burner is connected a gas and air mixing tube *m<sup>3</sup>*, intended to carry any suitable gaseous fuel to the burner. In this manner the lower yokes *c* are heated. Each of the upper yokes may be heated, as in the present instance, by a similar but oppositely-curved burner *n*, held in position within a recess in the yoke by means of the mixing-tube *n'*, which is mounted in the yoke, as illustrated in Figs. 1 and 2, and to which leads a flexible feed-pipe *n<sup>2</sup>*.

The holder *A'* at one end of the apparatus is stationary; but the other holder *A* is so mounted on the tie-bolts *b* and rods *l* that it may slide on the same to and from the stationary holder. To effect this movement, the lower yoke *c* of the movable holder *A* has secured to it a horizontal rod *o*, mounted to reciprocate through the adjacent end standard *a* and connected to a lever *p*, which is supported by a shifting fulcrum *p'* on a bracket projecting from said standard, as illustrated in Fig. 1, and projecting inwardly from the said standards are two rigid ejecting-pins *q*, adapted to enter the apertures *j'*,

for a purpose presently described, when the holder A is moved away from the other holder. One end of the lever *p* extends beyond its fulcrum and is connected, as shown best in Fig. 1, to one end of the link *r*, whose other end is connected to a rocking ejector *s*, pivoted intermediate of its ends on a bracket *s'*, with one end extending into the stationary holder A'.

Intermediate of the two holders A A' is a curved lever *t*, secured on the two rods *l* and provided with a handle portion *t'*, having a plurality of notches *t<sup>2</sup>*, with which a pivoted locking-bar *t<sup>3</sup>* may engage. By means of this lever *t* the upper yokes may be swung back or down upon the lower yokes and held down either by the pressure of the operator's hand upon the handle portion *t'* or by means of the locking-bar *t<sup>3</sup>*. A knocker-arm *u* is pivoted at one end on the rearmost rod *l* and carries a freely-rocking tappet *v*, provided with a lower concave face *v'*, and a stop *w* is secured to the lever *t* to limit the backward or upward movement of the said lever *u*.

In practical operation the holders (which are made of metal that is a good conductor of heat) are heated by means of the burners *m* and *n*, and after the holders have been opened a can is placed on its side in the lower yokes of the two holders, as indicated at *x*, Fig. 3, the two ends of the can, or top and bottom, fitting within the recesses *i'* and abutting endwise against the flange *j*. After the can has been so placed the holders are closed by swinging down the upper yokes *d*, and the lever *p* is manipulated to press the movable holder in a direction lengthwise of the can, so that the can is held tightly in the holders with an endwise or longitudinally-acting pressure exerted thereon by the flanges *j* *k*, as well as a transversely-acting pressure exerted therearound by the semicircular yokes. Within a minimum of time the heated holders will melt the solder forming the joint between the can-body and the top and bottom, respectively, and the can is in a condition to readily fall apart. The cans are heated by means of the holders, which become very hot, and the cans are not heated by the direct heat from the burners. The lever *p* is then manipulated to draw the movable holder A away from the stationary holder A', which action will separate the top from the body and the body from the bottom, the three parts dropping on the floor or into some suitable receptacle. In this connection it is to be remembered that the can-holders do not engage the body of the can, but engage only the top and bottom or two heads, which are flanged over the body, so that when the soldered joints are thoroughly heated and the solder melted the withdrawal of the movable holder from the stationary holder usually results in drawing one head from the body and in momentarily leaving the body and the other head supported by said head in the stationary can-holder. The weight of the body, however,

causes the same to tilt away from the remaining head, separating the joint between the two and permitting the two to drop to the floor or the receptacle. The parts, however, may sometimes stick in the holders, and to insure that the separated parts shall be discharged from the holders and to avoid any failure in this respect in case they should adhere to the holders I have provided for the discharge of the can-body the knocker-arm *u*, with its tappet *v*, and for the discharge of the top and bottom the ejector-pins *q* and rocking ejector *s*, the operation of said discharging parts being as follows: If the can-body should "stick," it is only necessary to raise the knocker-arm *u* slightly and then allow it to drop, whereupon its freely-rocking tappet *v* will strike the said body and knock it downwardly. The freely-rocking character of the said tappet and its concave-face formation *v'* enable the tappet to center itself squarely on the can-body irrespective of the circumferential size or contour of the latter, so that the tappet will not be liable to indent the body when it strikes thereagainst. When the lever *p* is moved so as to draw the movable holder A away from the stationary holder A', the apertures *j* of the flange *j'* of the adjacent lower yoke *c* will receive the rigid ejector-pins *q*, which latter will strike against the can part and eject it from the holder. At the same time the said movement of the lever, through the instrumentality of the link *r*, will rock the ejector *s* and cause the latter to eject the can part from the other holder.

An apparatus constructed in accordance with this invention will operate expeditiously to effect the disjunction of the parts of sheet-metal vessels, such as packing-cans, not only such vessels whose parts are joined by solder, but also, as I have demonstrated by repeated tests, such vessels whose heads and bottoms are joined to the body by crimping, because under the influence of the heat of the can-holders the crimped metal will straighten out and expand.

It is obvious that various changes in the proportion, arrangement, and construction of the parts of the apparatus may be made without departing from the scope of the invention. The structural embodiment of the invention illustrated in the accompanying drawings and described hereinbefore in detail is for the purpose of illustrating one way in which the invention may be carried out and, it is to be understood, does not limit the scope of the invention as defined in the appended claims.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An apparatus for disjoining the parts of sheet-metal vessels such as packing-cans, comprising a support for the can; means for heating said support whereby to disrupt the joints of the can; and means for opening said sup-

port whereby to discharge the separated parts of the can.

2. An apparatus for disjoining the parts of sheet-metal vessels such as packing-cans, comprising a support consisting of holders adapted to hold the can at the ends; means for heating said holders; and means for moving one holder away from the other whereby to open the said support, for the purpose set forth.

3. An apparatus for separating the top and bottom of a can from the body comprising a support for the can; means for heating said support to disrupt the joints between the said top, bottom, and body; means for opening said support for the discharge of the disjoined parts; and means whereby the opening of the support will automatically eject the top and bottom of the can.

4. An apparatus for separating the top and bottom of a can from the body comprising a support for the can; means for disrupting the joints between the said top, bottom, and body; means for opening said support for the discharge of the disjoined parts; and means whereby the opening of the support will automatically eject the top and bottom of the can.

5. An apparatus for separating the top and bottom of a can from the body comprising yoked holders adapted when in closed position to surround and clamp the top and bottom of the can; means for heating said holders; and means for drawing one closed holder away from the other, whereby, after the parts have been heated, the top will be pulled from the body and the body from the bottom.

6. An apparatus for separating the top and bottom of a can from the body comprising two holders adapted to support the can at the said top and bottom, each consisting of a lower and an upper yoke pivoted together and arranged to inclose or surround the said top and bottom of the can; means for heating said yokes; means for clamping said upper yokes down on the lower yokes; and means for moving one of said holders toward and from the other holder, for the purpose set forth.

7. An apparatus for separating the top and bottom of a can from the body comprising two holders adapted to support the can at the said top and bottom, each consisting of a lower and an upper yoke pivoted together and arranged to inclose or surround the said top and bottom of the can; means for heating said yokes; means for clamping said upper yokes down on the lower yokes; means for moving one of said holders toward and from the other holder; and ejectors adapted to discharge the top and bottom of the can from their respective holders.

8. An apparatus for separating the top and bottom of a can from the body, comprising holders adapted to support the can at the said top and bottom, and each holder consisting of yokes pivoted together at one end and pro-

vided with recesses to receive the said top and bottom; and a burner for each yoke.

9. An apparatus for separating the top of a can from the body, comprising a framework provided with tie-bolts or stays; two yokes supported on said tie-bolts, one of said yokes being slidable thereon; two swinging yokes pivoted one to each of said first-named yokes and forming therewith two holders adapted to support the can at its side, top, and bottom; rods connecting said swinging yokes whereby they will both swing together; means for swinging said yokes; and means for heating said yokes.

10. An apparatus for separating the top of a can from the body, comprising a framework provided with tie-bolts or stays; two yokes supported on said tie-bolts, one of said yokes being slidable thereon; and both yokes provided with depending apertured ears, *g*; a burner secured in said ears; two swinging yokes pivoted one to each of said first-named yokes and forming therewith two holders adapted to support the can at its said top and bottom; rods connecting said swinging yokes whereby they will both swing together; and burners for heating said swinging yokes.

11. An apparatus for separating the top and bottom of a can from the body, comprising a framework; a stationary can-holder and a slidable can-holder mounted in said framework; means for heating said can-holders; a rod secured to said slidable can-holder; and a lever fulcrumed on the framework and connected to said rod whereby to move the slidable can-holder toward and from the stationary can-holder, as and for the purpose set forth.

12. An apparatus for separating the top and bottom of a can from the body, comprising a framework provided with horizontal tie-bolts; two can-holders mounted in said framework and adapted to hold the can at its said top and bottom, one of said holders being slidable toward and from the other; ejector-pins secured to the framework; a lever adapted to draw the movable can-holder toward said pins and cause the latter to enter the holder; a rocking ejector mounted on the framework and adapted to enter the other can-holder; and a connection between said lever and rocking ejector.

13. An apparatus for the purpose described, comprising two can-holders adapted to be heated and forming a support for a can only at the ends of the latter; means for moving one of said holders from the other; and a lever provided with a freely-rocking tappet having a concave face adapted to strike against the body of the can to knock it downwardly, as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES J. CARROLL.

Witnesses:

HERMAN F. MEYER, Jr.,  
FREDERICK S. STITT.