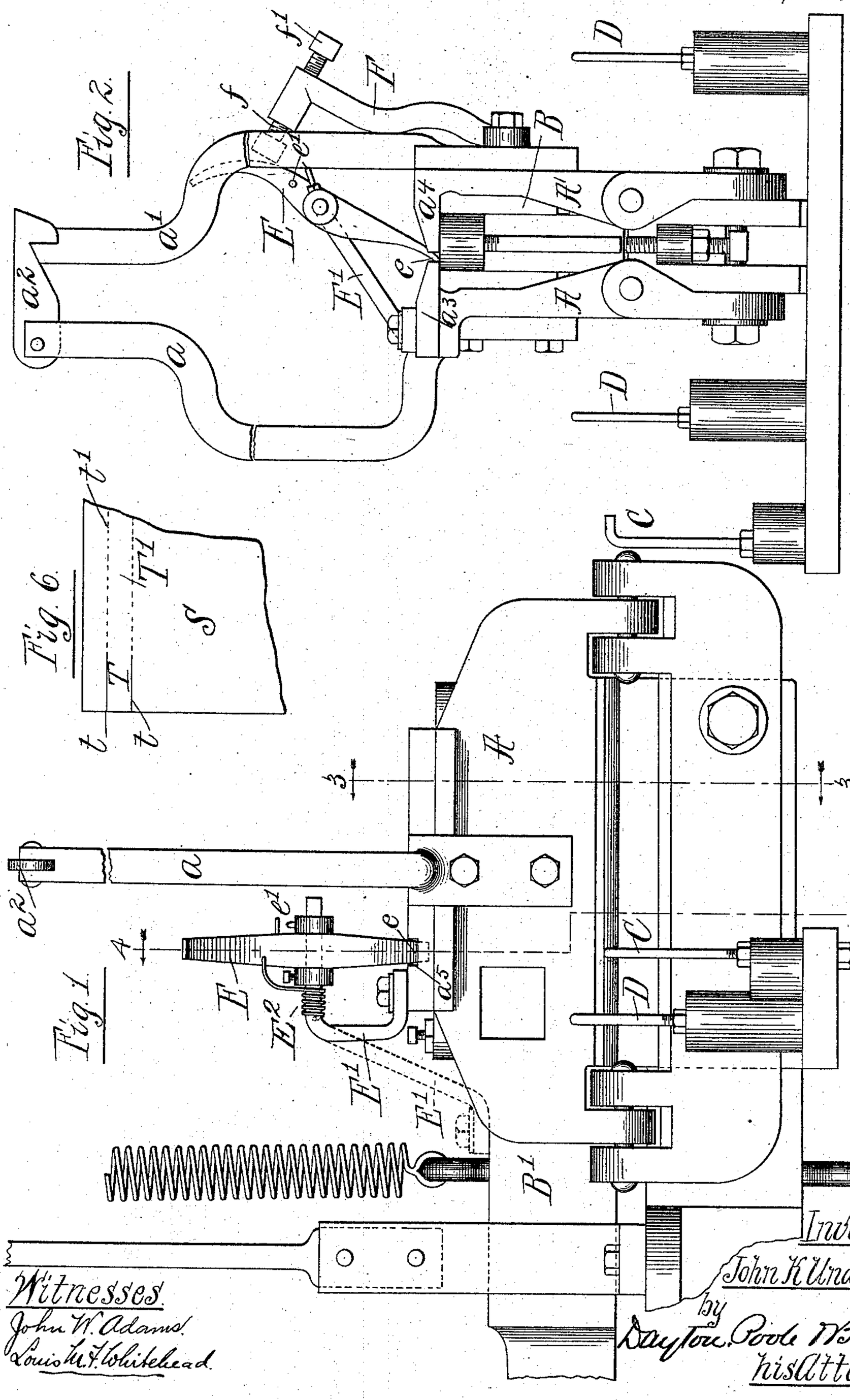
(No Model.) 2 Sheets—Sheet 1.

J. K. UNDERDOWN.

MACHINE FOR FORMING CAN BODIES.

No. 528,192. Patented Oct. 30, 1894.



Witnesses.
John W. Adams.
Louis M. T. Whitehead.

Inventor
John K Underdown
by
Dayton, Poole & Brown.
his Attorneys

(No Model.) 2 Sheets—Sheet 2.

J. K. UNDERDOWN.

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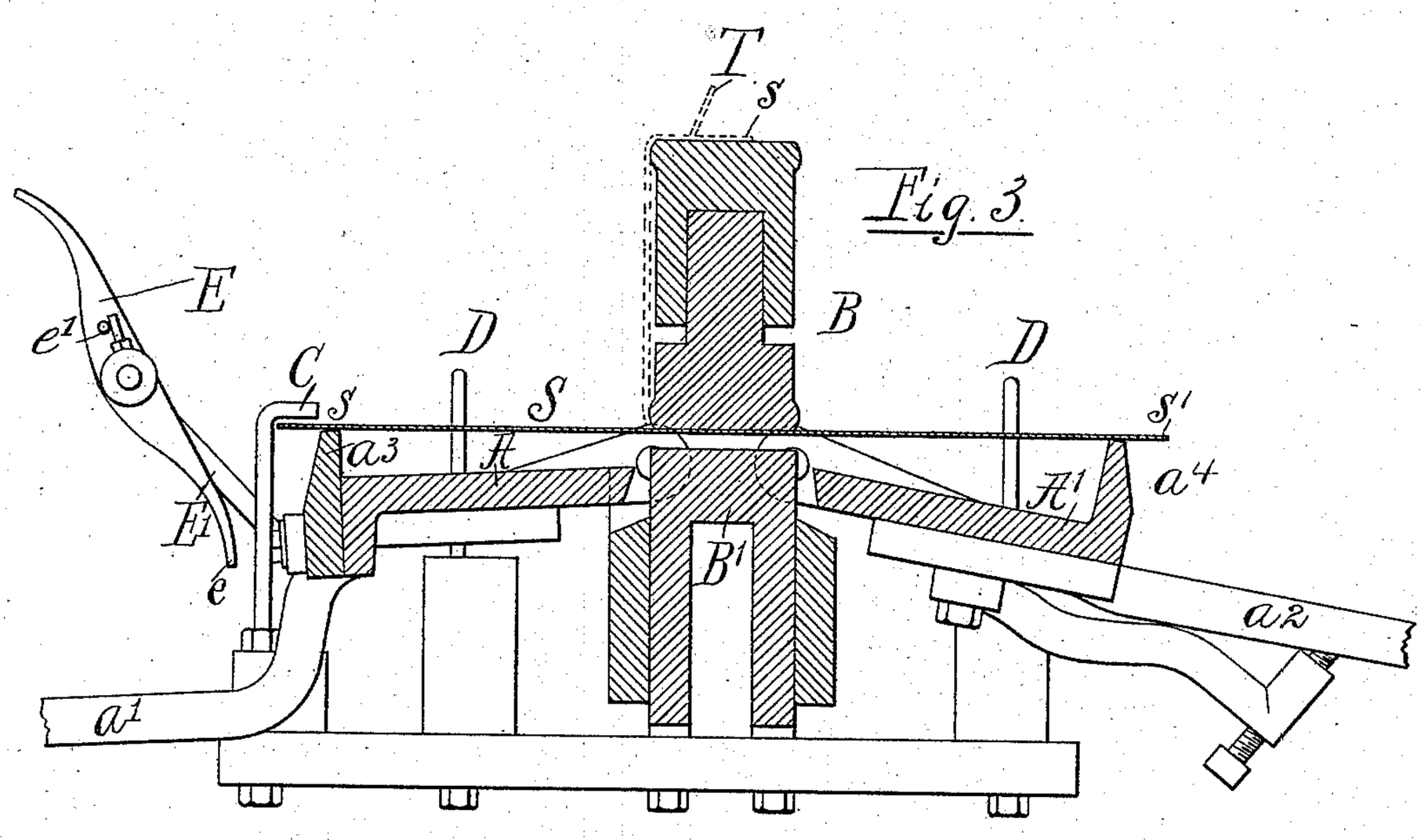
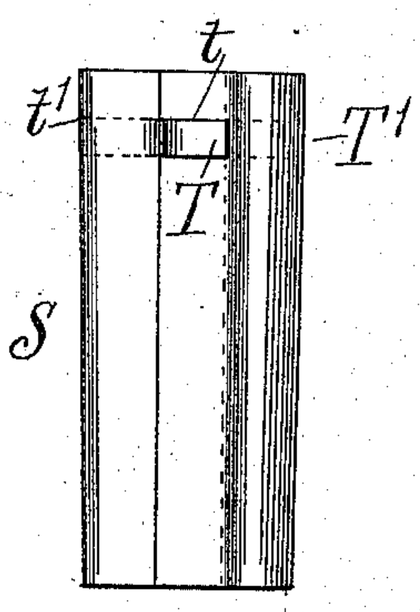


Fig. 3.

Fig. 5.



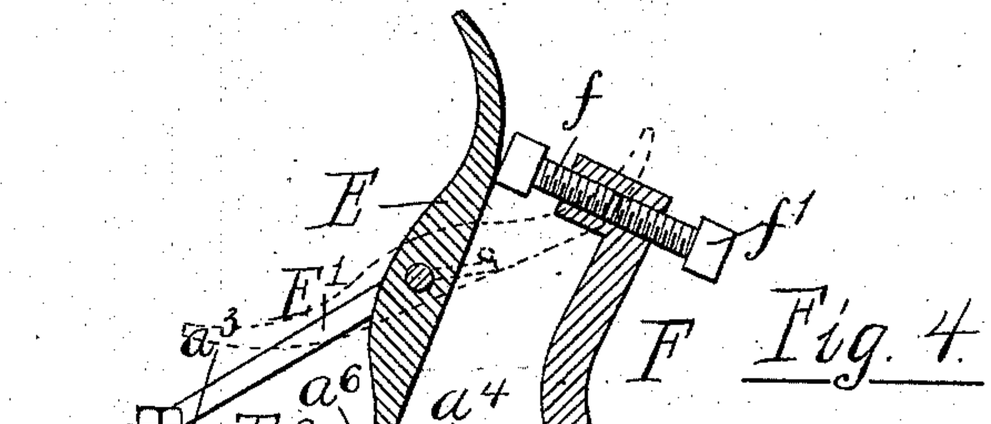
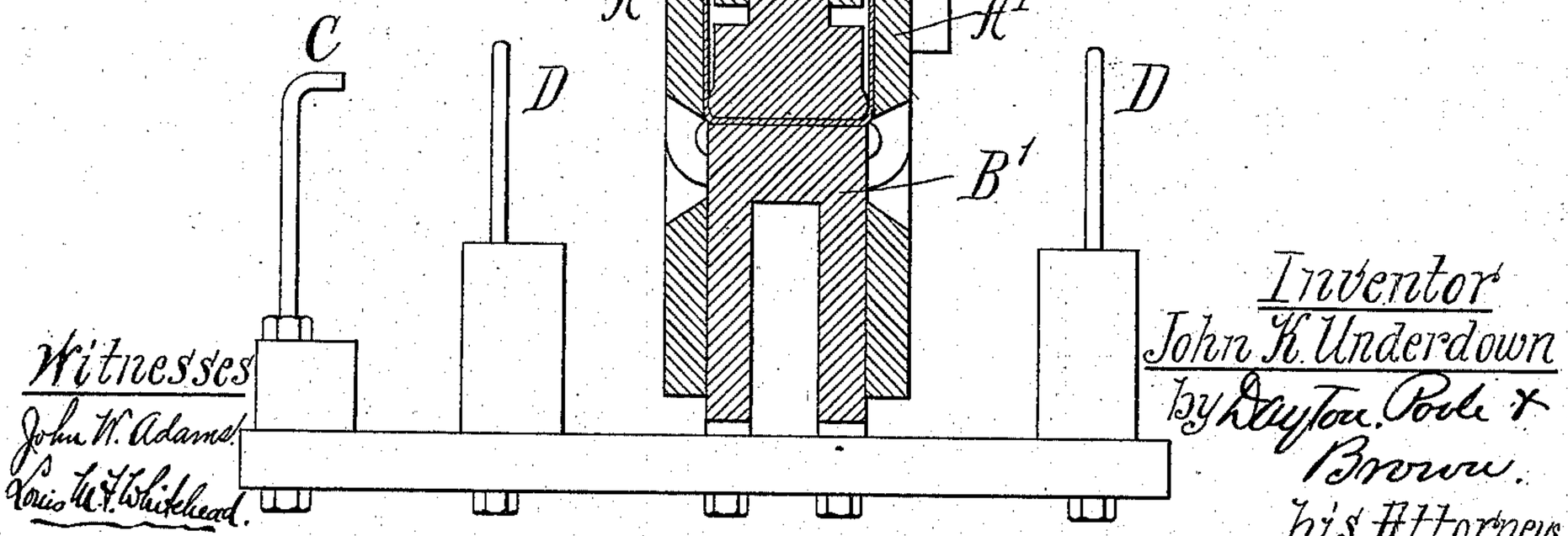


Fig. 4.



Witnesses
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Louis W. Whitehead.

Inventor
John K. Underdown
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his Attorneys

UNITED STATES PATENT OFFICE.

JOHN K. UNDERDOWN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE NATIONAL KEY-OPENING CAN COMPANY, OF SAME PLACE.

MACHINE FOR FORMING CAN-BODIES.

SPECIFICATION forming part of Letters Patent No. 528,192, dated October 30, 1894.

Application filed July 22, 1893. Serial No. 481,179. (No model.)

To all whom it may concern:

Be it known that I, JOHN K. UNDERDOWN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Forming Can-Bodies; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to machines for forming sheet metal can bodies, and more especially to machines for shaping polygonal can bodies.

The machine as improved by this invention is intended to operate upon can body blanks of the character set forth in Letters Patent Nos. 486,522 and 486,523, granted to John Zimmerman November 22, 1892, in which one end of a can body blank is made to overlap the opposite end, but to underlap an inset free tongue belonging to the last mentioned end of the blank and forming a part of a circumferential detachable strip in the can body.

The particular object of the present invention is to provide means for bending down the tongue after the ends of the blank have been lapped, said tongue having been previously bent back to permit such lapping of the blank extremities.

In constructing can bodies in accordance with the aforesaid Zimmerman patents a detachable strip is provided along or parallel with an edge of the blank which is to form the top or bottom of the can body, and one extremity of this detachable strip is made free from the body of the sheet by one or more lateral slits in continuation of the weakened line or lines by which the strip is rendered detachable. In the formation of a polygonal can body from such a blank the end of the body carrying the tongue is first folded over and down upon the horn or former of the seaming machine and the opposite end is thereafter folded down upon it, the tongue having been previously bent backward out of the way of this last operation.

The present improvement consists, primarily, in providing a forming or seaming machine with a device for bending down the retracted tongue upon the superposed end of the blank preparatory to applying solder to the seam while the blank is still upon the former.

In the accompanying drawings, which illustrate one practicable embodiment of my invention, said invention is shown as applied to a machine which also contains means for bending back the tongue in the act of forming the can body, this last mentioned improvement forming, by itself, the subject matter of an application for patent, Serial No. 455,355, filed December 16, 1892, by John Zimmerman and myself.

Figure 1 of the accompanying drawings is a side elevation of a can body forming machine containing my invention and having the forming jaws closed over the forming horn. Fig. 2 is a front elevation of the machine, showing the forming jaws closed over the horn. Fig. 3 is a vertical section in the line 3—3 of Fig. 1, but showing the forming jaws retracted and a blank sheet inserted in the machine preparatory to its being folded about the horn. Fig. 4 is also a section in the line 4—4 of Fig. 1 but showing the jaws folded about the horn and can body sheet. Fig. 5 is a top view of a can body after being formed and operated upon by the machine. Fig. 6 represents a portion of that end of a blank or body sheet which carries the free tongue of a detachable strip.

First describing the blank to be operated upon by the machine herein set forth, S. (Fig. 6) represents the blank sheet, T the free tongue which, in this case, is shown as being separated by two slots *t t* from the body sheet, and T′ the detachable strip to which the tongue belongs and made detachable by two weakened lines *t′*, parallel with one edge of the sheet so as to be situated near an end of the formed can body.

A A′ represent the pivoted jaws and B the horn or former of a familiar kind of machine for shaping polygonal can bodies from flat metal sheets, *a a′* being arms projecting from the jaws A A′, and a^2 a latch applied to the arms for locking the jaws in their folded po-

sition about the horn and folded sheet while the lapped seam of the can body is being soldered.

C represents a hook for performing the above mentioned operation of retracting or bending back the tongue out of the plane of the blank in the act of folding the latter about the horn, as fully set forth in the above mentioned application for patent, Serial No. 455,355.

D D are gage pins or stops against which the edge of the body blank is place preparatory to its being folded.

E represents a lever which belongs to my present improvement. Said lever E is shown pivoted between its ends upon an arm E′ which is in turn fixed to the forming jaw A, the lower end *e* of said lever being in the same vertical plane with the tongue-bender C.

F is an arm fixed to the opposite forming jaw A′ and intended to strike the upper end of the lever E as the jaw approaches its fully raised position over the horn B, for the purpose of throwing the lower end of said lever inwardly over the tongue and bending the latter down flat upon the seam. A suitable adjusting device to cause a proper movement of the lever E is shown in the adjusting screw *f* which is tapped into the outer end of the arm F and serves as the contact point of said arm with the lever E. The screw *f′* is merely a set screw to hold the screw *f* firmly to any position given it. A spring E^2 is shown in suitable arrangement with reference to the lever E to automatically retract the latter after being released from the pressure of the striker F, the retraction of the lever being sufficient to clear the tongue bender C when the latter is present in the machine. A stop device, as *e′*, may desirably be employed to limit the retraction of said lever.

The various details of the main machine need not be described for the reason that they are old and familiar.

Describing the operation of the machine as provided with my present improvement, the jaws A and A′ are retracted into the horizontal or nearly horizontal positions shown in Fig. 3, and in this position of these parts the blank S is inserted beneath the horn B and over the flanges a^3 a^4 on the outer ends of said jaws. The gage stops D arrest the blank in its proper position to bring the tongue T beneath the hook C. With the blank placed as described and the horn B depressed by a treadle not shown so as to clamp the blank between the bottom of the horn and the subjacent bed piece B′, the jaw A is first lifted to a vertical position, carrying the end *s* of the blank S before it into the position represented by dotted lines in Fig. 3 and by full lines in Fig. 4. In this elevation of the jaw A the tongue T of the blank encounters the hook C and is by it bent back or retracted so as to finally stand at or nearly at a right angle with the adjacent portion of the blank, or in the relative position indicated by dotted lines at the top of Fig. 3 and by dotted lines in Fig. 4. After the tongue-bearing end *s* of the blank S is thus folded over the horn by the jaw A the jaw A′ is lifted to carry the opposite end *s′* of the blank over the horn and over the previously placed end *s* of the blank, as indicated in Fig. 4. In this movement of the jaw A′ and near its close, but after the end *s′* of the blank has passed clear of the retracted tongue T, the arm F vibrates the lever E from its retracted position (shown by dotted lines in Fig. 4) to the more nearly vertical position shown by full lines in the same figure and causes its lower end to flatten the tongue T down upon the superposed end *s′* of the blank, as indicated. The machine and blank are locked in these positions while the seam is soldered, after which the jaws and their accompanying parts are again retracted and the can body, Fig. 5, is slipped off the horn.

The flanges a^3 and a^4, if in the way of the hook or tongue-bender C and tongue-flattener E, are cut away suitably to clear them, a notch a^5 being shown in the back of the flange a^3 to clear the tongue-bender, and a notch a^6 being shown in the flange a^4 to clear the flattener or depressor E.

While only polygonal can bodies are usually formed by means of a machine having forming jaws, it is evident that cylindric can bodies may be similarly formed if desired and that the invention is therefore equally applicable to the shaping of all forms of can bodies from the blank described. It is also manifest that the tongue depressor may be given a great variety of forms, may be variously mounted and may be operated by means other than that shown.

Among the numerous changes that may evidently be made from the particular construction above described I call attention only to that indicated by dotted lines in Fig. 1, in which such lines show the supporting arm E′ on which the tongue-depressor E is pivoted as proceeding from the bar B′ which carries the horn B, instead of proceeding from the forming jaw A. This and other modifications are to be included in some of the appended claims.

I claim as my invention—

1. In a machine for forming can bodies, the combination with the former and the jaws for folding the blank about the former, of a downwardly and laterally movable depressor adapted to depress a previously retracted part of the underlying end of the blank upon the superposed end of the blank.

2. In combination with the horn and folding jaws of a can body former, a movable depressor actuated by one of the said jaws, whereby a retracted tongue upon one end of a can body blank may be depressed upon the seam of the can body.

3. In combination with the jaws of a can-body former, a tongue depressor movably connected with one of the said jaws and a part

attached to the other jaw arranged to engage and operate the said depressor in the act of closing the jaws.

4. The combination with the jaws and horn of a can-body forming machine, of a tongue bender for retracting an inset tongue of a blank, and a tongue depressor for depressing the tongue, (belonging to the underlapping end of the blank,) upon the overlapping end of the said blank, substantially as described.

5. In combination with the jaws and horn of a can-body forming machine, a pivotally supported tongue-depressing lever having one of its ends arranged in position to strike a retracted inset tongue upon the end of a can-body blank and a striker connected with one of the jaws and arranged in position to engage the opposite end of the said depressing lever and to thereby actuate the latter.

6. In a machine for forming can bodies, the combination with the former and the jaws for folding the blank about the former, of a downwardly and laterally movable depressor and a spring for retracting said depressor.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

JOHN K. UNDERDOWN.

Witnesses:
M. E. DAYTON,
ALBERT H. GRAVES.