(No Model.) 2 Sheets—Sheet 1.

J. BAKER.

CAN CAPPING MACHINE.

No. 564,042. Patented July 14, 1896.

Fig. 1.

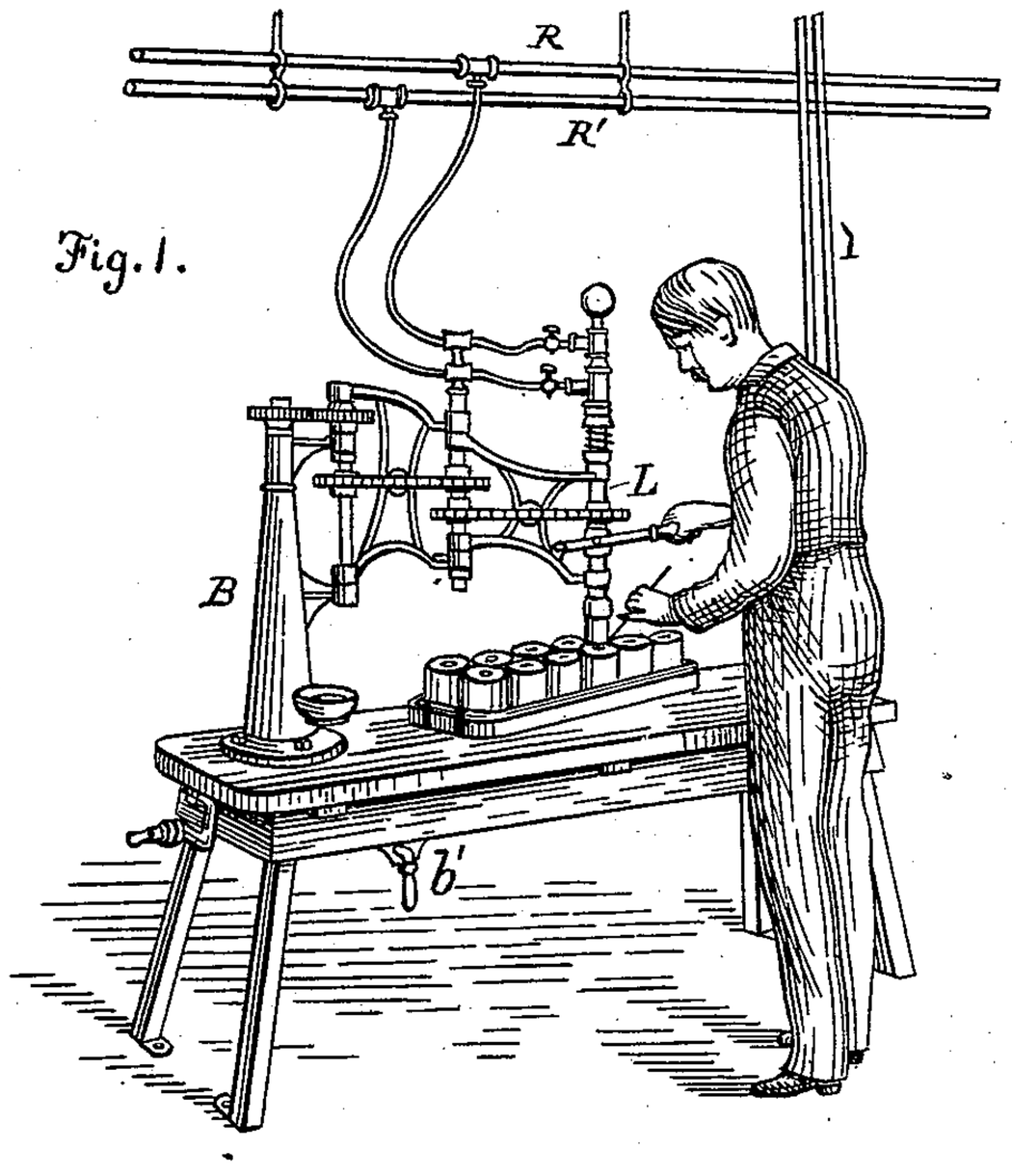


Fig. 2.

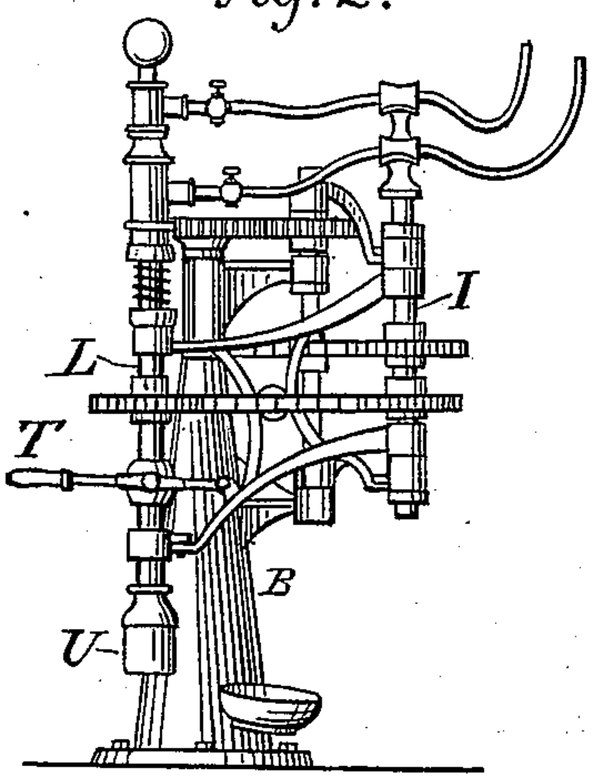


Fig. 7.

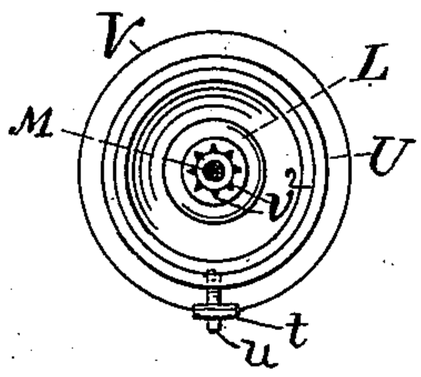


Fig. 8.

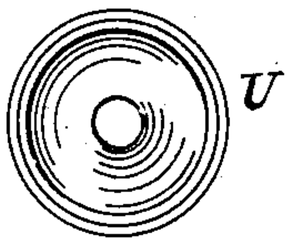
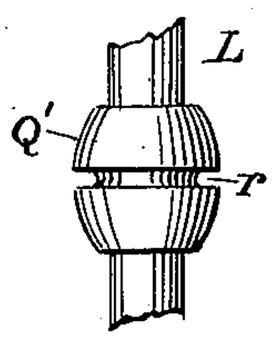


Fig. 9.



Witnesses:
G. B. Towles.
V. E. Hodges

Inventor:
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By H. A. Daniels
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(No Model.) 2 Sheets—Sheet 2.

J. BAKER.

CAN CAPPING MACHINE.

No. 564,042. Patented July 14, 1896.

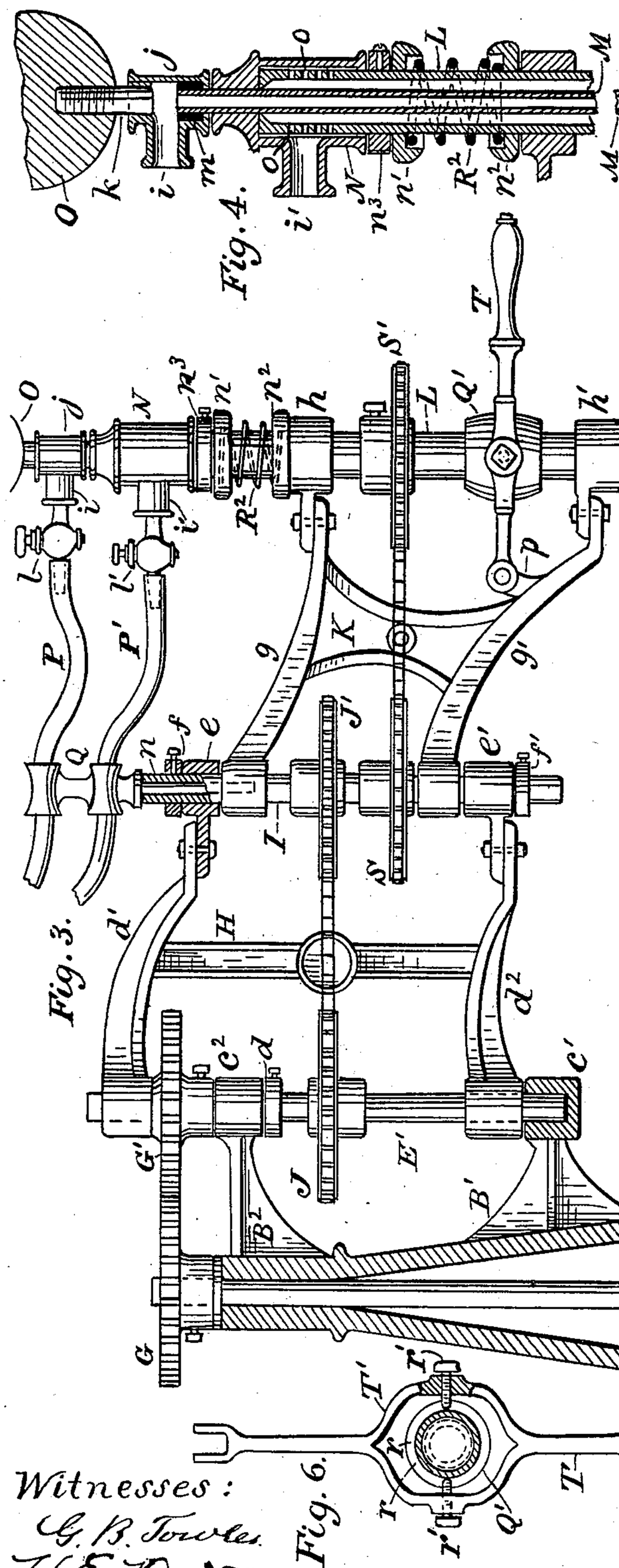

Fig. 4.

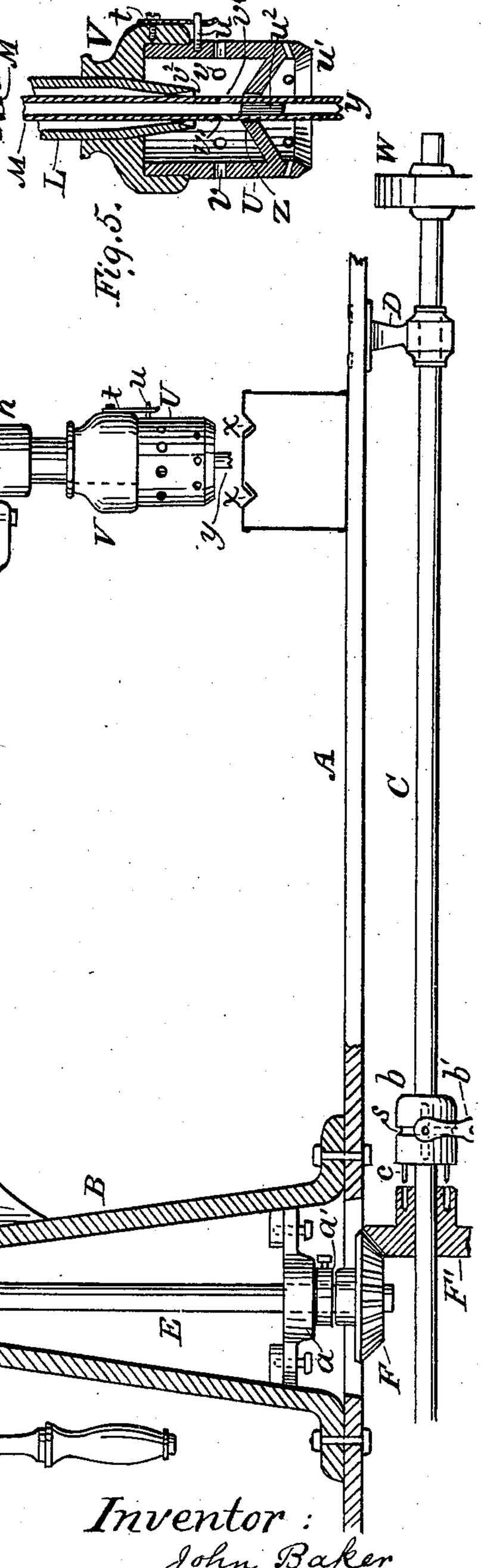

Fig. 5.

Fig. 3.

Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN BAKER, OF MUSCATINE, IOWA.

CAN-CAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 564,042, dated July 14, 1896.

Application filed November 1, 1893. Serial No. 489,724. (No model.)

To all whom it may concern:

Be it known that I, JOHN BAKER, a citizen of the United States, residing at Muscatine, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Can-Capping Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to can-capping machines; and it consists in certain improvements in the construction of such machines, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents my improved capping-machine in operation. Fig. 2 shows the machine as when folded. Fig. 3 illustrates the machine in sectional side view. Fig. 4 illustrates in vertical section the upper part of a tubular shaft or spindle and connections. Fig. 5 shows in section a cylindrical capping and soldering tool and connections. Fig. 6 is a sectional plan view of a lever and a hollow head used in connection with the tubular shaft. Fig. 7 is an end view of the tubular shaft and the soldering-tool. Fig. 8 is an edge view of the soldering-tool. Fig. 9 is a side view of a hollow grooved head on the tubular shaft for use in connection with a lever.

A designates a table on which is mounted a hollow tapering column B. C indicates a horizontal shaft which is mounted in hangers D, secured to the table, as shown. E indicates a vertical shaft mounted in said column and extending upward through the same. A bearing *a* for shaft E is placed within said column at the base and a collar *a'* is made fast to said shaft under said bearing-piece, these parts serving to sustain the shaft E in true vertical position.

A beveled gear-wheel F is made fast on the shaft E at its lower end, and a beveled gear-wheel F' is placed on the horizontal shaft C, in position to engage with the gear-wheel F. The gear-wheel F' is loose on the shaft C, but may be made fast thereon by means of a clutch formed of the hub of said wheel and a cylindrical head *b* on the shaft, which is provided with a feather which fits in a groove made in the head *b*, so that the latter may slide on the shaft and be connected with the hub of said wheel, the connection being effected by means of two pins *c*, in position to enter two opposite holes in the hub. The head *b* has a groove S extending around it, and a forked pivoted lever *b'* is in position to connect with the grooved head, so that by a movement of said lever the shafts C and E may be put into or out of engagement.

Fast on the shaft E, at its upper end, is a gear-wheel G, in position to engage another gear-wheel G', which is fast on a vertical shaft E', which is mounted in a step-box *c'*, carried by an arm B', extending from the column B. Another arm, B^2, extending from said column, carries a box c^2 for the shaft E', and just below the shaft-box c^2 is a collar *d*, which is made fast to said shaft, the latter, with gear-wheel G', being thus sustained in correct position.

H indicates a movable frame, which is connected with the shaft E' by an upper bar *d'*, which connects with said shaft above gear-wheel G', and by a lower bar d^2, which connects with said shaft just above the step-box *c'*.

I indicates a hollow vertical shaft, which is mounted in boxes *e e'*, which are fastened to the extremities of the bars *d' d²* of the frame H, a collar *f* being fastened to said shaft just above the box *e*, and a collar *f'* being fastened on said shaft at its lower end and under the box *e'*.

J indicates a chain-wheel made fast to the vertical shaft E' and connected by chain band with a chain-wheel J', which is fast on the vertical shaft I.

Connected with the shaft I is a movable frame K, an upper bar *g* of said frame being connected with said shaft just under the shaft-box *e*, and a lower bar *g'* being connected with said shaft just above the shaft-box *e'*. To the extremities of the bars *g g'* of the flexible frame K are secured two shaft-boxes *h h'* of a vertical tubular shaft L, which carries the soldering-tool hereinafter described. Within the tubular shaft L is placed another tubular shaft or pipe-shaft M, which is less in diameter and somewhat longer than the shaft L.

To the upper end of the inner shaft M is fitted a hollow cylinder *j*, which has a branch *i*. A screw-plug *k* is fitted in the top of said

cylinder *j*, and carries a weight O, and a stuffing-box *m* is formed in said cylinder around the upper end of the inner pipe-shaft M. Another hollow cylinder N, provided with a branch *i'*, is fitted on the upper end of the tubular shaft L, the upper part or cap of said cylinder fitting on the shaft M, as shown. Tubes having valves *l* and *l'* are inserted in the branches *i i'*, respectively, of said two cylinders. Flexible tubing P is connected with the tube of the valve *l*, and similar tubing P' is connected with the tube of valve *l'*. These flexible tubes are passed through two tubular supports of a holder Q, which is provided with a stem *n*, which is inserted in the hollow shaft I and is loosely held by said shaft. The holder serves to keep the tubes in position and prevents their kinking. The tubes P P' are connected with pipes R R', respectively, which are supply-pipes, the former being for gas and the latter for air, and both pipes are supported above the working table.

The hollow shaft L, at its upper end, which is within the cylinder N, has perforations, as seen at *o*, so that air conducted through the flexible tubing P' to the cylinder N passes into the tubular shaft L, while gas or other vapor fuel, conducted through the tubing P to the cylinder *j*, passes down through the inner pipe-shaft M. A collar n^3 is placed on and made fast to the tubular shaft L just below the cylinder N, as shown.

On the shaft L, between the collar n^3 and the shaft-box *h*, is placed a spiral spring R^2, which is confined between two flanged collars *n' n²*, placed on said shaft, the collar n^2 resting on the shaft-box *h*. Rotary motion is imparted to the tubular shaft L from the shaft I through chain-wheel S, which is fast on the shaft I, and a chain-wheel S' on the shaft L, the two chain-wheels being connected by chain belt, as shown.

T indicates a lever for raising and lowering the tubular shaft L during operation, the said shaft L forming the spindle of the capping-tool. About midway the lever T has an opening or forms a frame T', which surrounds the shaft L. A hollow head Q', having a central groove *r* in its outer surface, is placed on the shaft L and secured thereto. Two set-screws *r'* are passed through the frame T' at opposite points, so that the points of said screws enter the groove *r* of the head Q' at opposite points, the points of the screws being rounded to correspond with the form of said groove, and thus during the rotation of shaft L in operation the said shaft may, by means of said hand-lever, be lowered or raised. The lever T has a pivotal connection at one end with an arm or lug *p* on the movable frame K.

To the shaft L, near its lower end, is secured a hollow circular head V, to which the capping soldering-tool U is removably secured. The tool U is of steel, being hollow and cylindrical, and is open at its upper end, which is inserted in the head V. A spring *t* is fastened to the head, and a fixed pin or stud *u* extends from the tool U through a hole in said spring, and by raising the latter from connection with the pin *u* the soldering-tool may be readily detached.

The lower or point end of the soldering-tool U has an annular V-shaped edge *u'*, which conforms to the V-shaped annular groove in the top of a can (indicated at *x*) which receives the solder and surrounds the mouth of the can. The tool U, in its lower part, is made to close loosely on the inner pipe-shaft M, as seen at *z*, and vent-holes *v* are made in the cylindrical shell of the tool, which forms a combustion-chamber.

The central pipe-shaft M extends down through the soldering-tool and a little below the plane of the edge *u'*. Holes *v'* are made in the said pipe-shaft, through which the gas may pass into the combustion-chamber, the pipe M being closed below the holes *v'* by a plug u^2, and pipe-shaft M thus forms a burner within the soldering-tool. The lower end of pipe M is notched, as seen at *y*, being intended to bear down on the central part of the can-cap when the solder is applied. It is found in practice that the melted solder, being poured in the groove which receives the edge of the cap, will float the cap, raising it somewhat, unless the cap is held down to the can until the solder becomes cool, and this is effected by means of the central pipe-shaft M, which has a limited vertical movement within the tubular pipe L.

The lower end of the tubular shaft L extends a suitable distance into the soldering-tool and is made to fit loosely on the pipe-shaft M, internal notches v^2 being made in shaft L for the passage of air therefrom to the combustion-chamber in the soldering-tool.

Power being communicated through belting Y to the pulley or band wheel W on the shaft C, rotary motion is imparted to the vertical shaft E through the beveled gearing F F' and from shaft E to the vertical shaft E' through gear-wheels G G'. Rotary motion is imparted from the shaft E' to the shaft I through chain-wheels J J', connected by chain band, as shown, and rotary motion is imparted from the shaft I, through chain-wheels S S' and chain band connecting said wheels, to the tubular shaft L, which forms the spindle of the soldering-tool U, and also is an air-pipe for conducting air to the combustion-chamber in said soldering-tool, which latter revolves during operation with shaft L.

The shaft E' is firmly mounted in bearings carried by arms extending from the tapering column B, and said shaft supports the movable frame H, which is loosely connected therewith, as before described. The movable frame H supports the shaft I, and the latter supports the movable frame K, which carries boxings, in which is mounted the tubular shaft L, which, with its connections, is sustained by the spring R^2 between the flanged loose

collars n' n^2, the collar n^3, fast on shaft L, and boxings h h', carried by the movable frame K. These frames H and K, with the boxings and bearings of the several shafts with which the movable frames are connected, serve to keep said shafts and their connecting-gearing in proper running position, so that the shafts revolve freely.

As will be seen from the construction of the tubular spindle L and inner pipe-shaft M and their connections, the pipe-shaft M has a slight vertical movement with the tubular spindle L. When the machine is in operation and the operator presses down the lever T to bring the soldering-tool to the top of the can, the pipe-shaft M, which projects, when in its normal position, about three-fourths of an inch farther down than the soldering-tool, first comes in contact with the can, bearing on the can-cap at the center, and is kept down by the weight O at the top of said pipe-shaft. The capping-spindle L, carrying the tool U, and the cylinder N at the top of the spindle, continues its downward movement till the edge of the tool enters the annular groove in the top of the can. The spring R^2 is compressed by this downward movement of the spindle, and the two cylinders j and N are separated about three-quarters of an inch apart. The solder, being applied to the heated tool, melts and flows into the annular groove surrounding the can-cap and is distributed therein by the revolving tool. When the solder is sufficiently cool to fasten the cap, the operator, by means of the lever T, raises the spindle L, the movement being assisted by the spring R^2, and when the cylinder N, on the top end of spindle L, comes in contact with the cylinder j on the upper end of pipe-shaft M, the latter is raised from the can-cap to its former elevation.

Gas or vapor fuel being supplied through the tubing P passes into the cplinder j, and from thence down through the inner pipe-shaft M and through aperture v' into the combustion-chamber of the cylindrical tool U, and may be ignited through the apertures v. Air being supplied through the tubing P' passes into the cylinder N, and from thence down through the hollow spindle L into the combustion-chamber and mingles with the burning gas, so that the soldering-tool becomes rapidly heated from the inside. The gas and air supplies may be severally regulated by means of the valves l l' of the tubings P P'.

The device may be folded when not in use, as seen in Fig. 2, the folds being at the pivotal connections of the frames H and K. The machine as constructed may be adjusted to cap cans at any points within a radius of four feet, the supporting-frames having pivotal connections, so that they may be turned laterally on their bearings, and the said frames between the vertical shaft E' and the capping-spindle may be either extended or contracted.

I claim—

1. The combination with a column, of a vertical, rotative shaft mounted in said column, a vertical, rotative shaft, mounted in bearings carried by said column, a movable frame loosely connected with the shaft carried by said column, a vertical shaft, loosely connected with and carried by said movable frame, another movable frame extending from and loosely connected with the last-mentioned shaft, and a rotative spindle, loosely connected with and carried by the last-mentioned frame, a soldering-tool carried by said spindle and gearing connecting said vertical shafts with said spindle, substantially as set forth and described.

2. The combination with a vertical, rotative shaft mounted in fixed bearings, of one or more movable frames, loosely connected one with another and also loosely connected with and carried by said rotative shaft, a rotative spindle, connected with and carried by one of said movable frames, a soldering-tool connected with said spindle, and gearing adapted for imparting rotary motion from said vertical shaft to said spindle, substantially as set forth and described.

3. The combination with a column B, a vertical, rotative shaft E mounted therein and a driving-shaft, connected by gearing with shaft E, of a vertical shaft mounted in a step-box carried by said column and extending through a box c^2, also carried by said column, gearing connecting the last-mentioned shaft with shaft E, a movable frame loosely connected with the shaft carried by the column, a vertical shaft I, mounted in boxes carried by said movable frame and having collars f, f', fast on said shaft, gearing for rotating said shaft I, a movable frame connected with and carried by shaft I, a rotative spindle connected with and carried by the last-mentioned movable frame, a soldering-tool connected with said spindle, and gearing connecting shaft I with said spindle, substantially as set forth and described.

4. The combination, with a vertical, rotative shaft, of a movable frame, loosely connected with and carried by said shaft, a vertical, tubular spindle, loosely connected with and carried by said frame, a hollow soldering-tool connected with said spindle, an inner pipe-shaft extending through the said spindle and soldering-tool, both said spindle and pipe-shaft having communication with the interior of said tool, and said pipe-shaft being closed at its lower end, tubing for vapor-fuel, leading to and connected with said inner pipe-shaft, and tubing for air leading to and connected with said tubular spindle, gearing connecting said rotative shaft and said spindle, and devices for raising and lowering said spindle, substantially as set forth and described.

5. The combination, with a supporting-frame, of a vertical, tubular spindle, mounted in and carried by said frame, a tool secured

to said spindle, a spring placed on said spindle and adapted to raise it, a hollow head secured on said spindle and provided with an annular groove in its outer surface, a pivoted lever, provided with a frame which surrounds said hollow head, and two screws carried by said frame, said screws being in position to enter said annular groove at opposite points, whereby said spindle may be raised or lowered, substantially as set forth and described.

6. The combination, with a supporting-frame, of a tubular spindle, carried by said frame, a hollow, soldering-tool secured to the lower end of said spindle, an inner pipe-shaft, loosely mounted in and extending downward through said spindle and soldering-tool, a cylinder containing a stuffing-box, secured to the upper end of said pipe-shaft, a weight adapted to press downward said pipe-shaft, a cylinder mounted on the upper end of said spindle and closing about said pipe-shaft, and tubings provided with valves and having connection through said cylinders respectively with said tubular spindle and pipe-shaft, substantially as set forth and described.

7. The combination with a hollow shaft I, of a movable frame connected with said shaft, a tubular spindle carried by said frame, an inner pipe-shaft loosely held by said tubular spindle, a holder adapted to receive tubes, said holder being provided with a stem and loosely mounted in said shaft I, a tube for gas, having connection with said inner pipe-shaft, and a tube for air, having connection with said tubular spindle, both of said tubings being sustained in position by said holder, substantially as set forth and described.

8. The combination, with a rotative spindle, of a hollow head V secured thereto, a soldering-tool inserted in said hollow head, a perforated spring, secured to said hollow head, and a fixed pin extending from said tool through a hole in said spring, whereby said soldering-tool is removably secured, substantially as set forth and described.

9. The combination, with a supporting-frame, of a tubular spindle, having a soldering-tool connected therewith, a pipe-shaft within and extending through said spindle, the latter and said pipe-shaft being each vertically movable, a cylinder secured to the upper end of said spindle and adapted for connection with a supply-tube, a cylinder secured to the upper end of said pipe-shaft and adapted for connection with a supply-tube, the cylinder last mentioned being directly above the cylinder on said spindle, whereby said pipe-shaft may be raised by the upward movement of said tubular spindle, substantially as shown and described.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN BAKER.

Witnesses:
J. M. KEMBLE,
CHAS. W. KEMBLE.