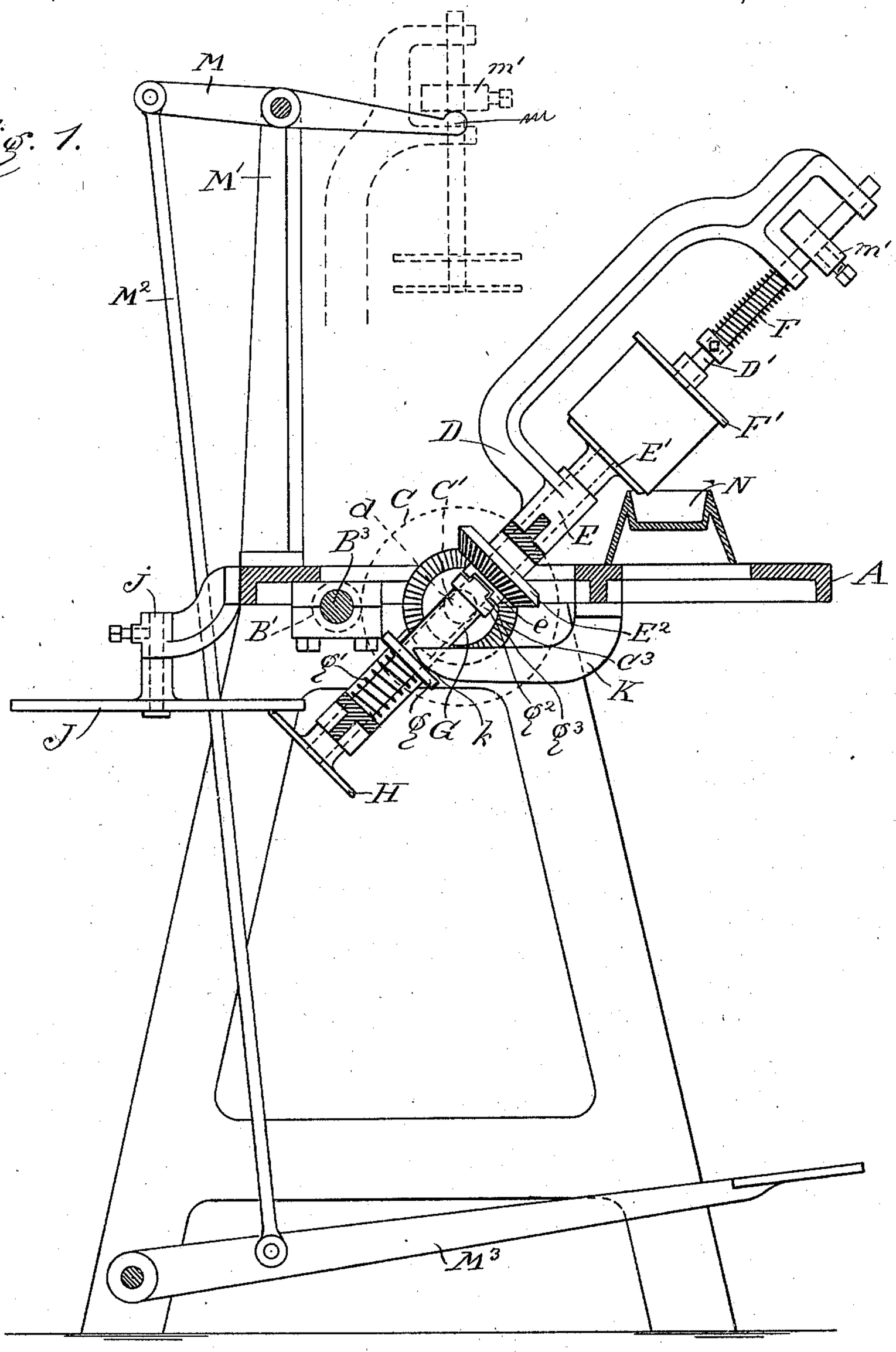
(No Model.) 3 Sheets—Sheet 1.

E. P. HOLDEN.

CAN SOLDERING MACHINE.

No. 598,565. Patented Feb. 8, 1898.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

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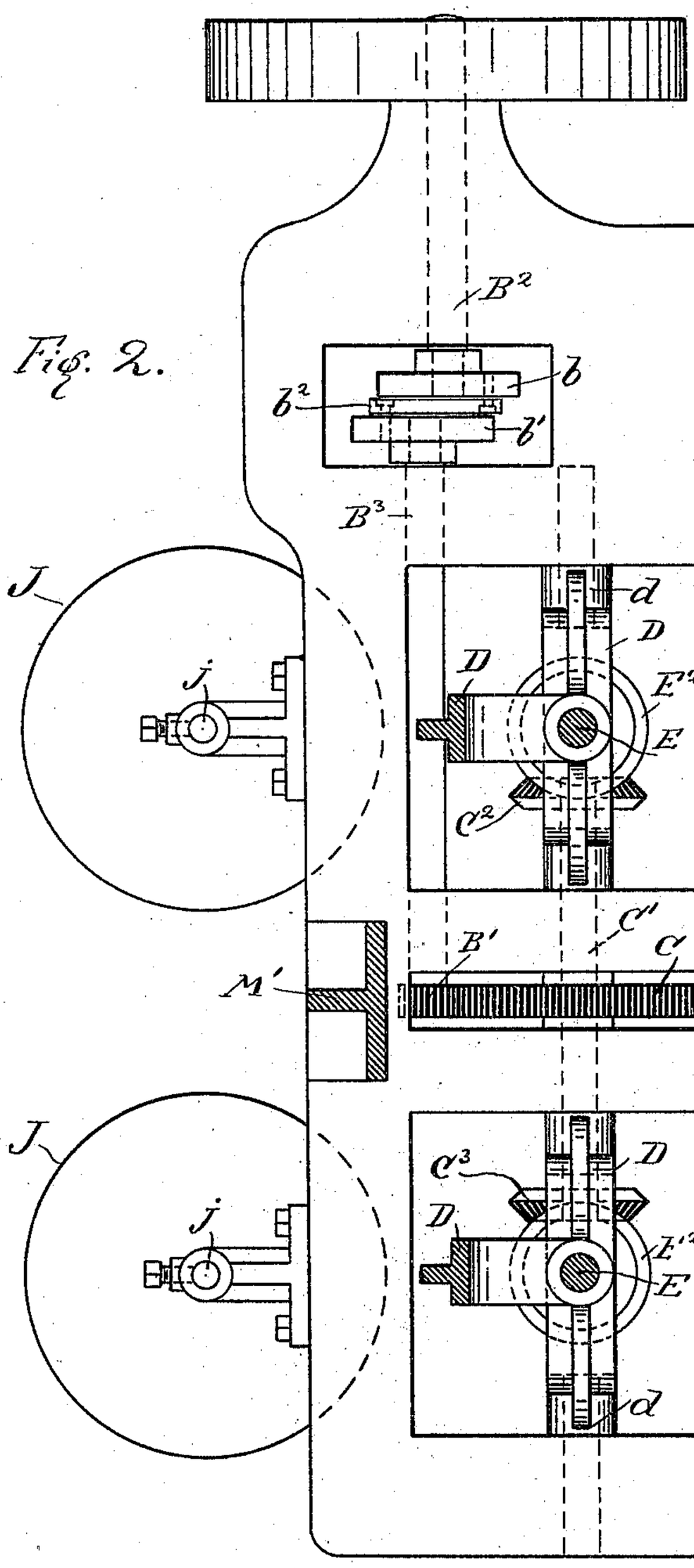

Fig. 2.

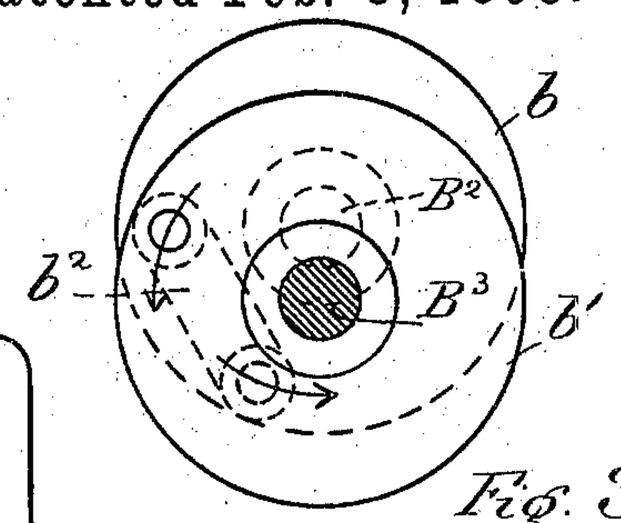

Fig. 3.

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(No Model.) 3 Sheets—Sheet 3.

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CAN SOLDERING MACHINE.

No. 598,565. Patented Feb. 8, 1898.

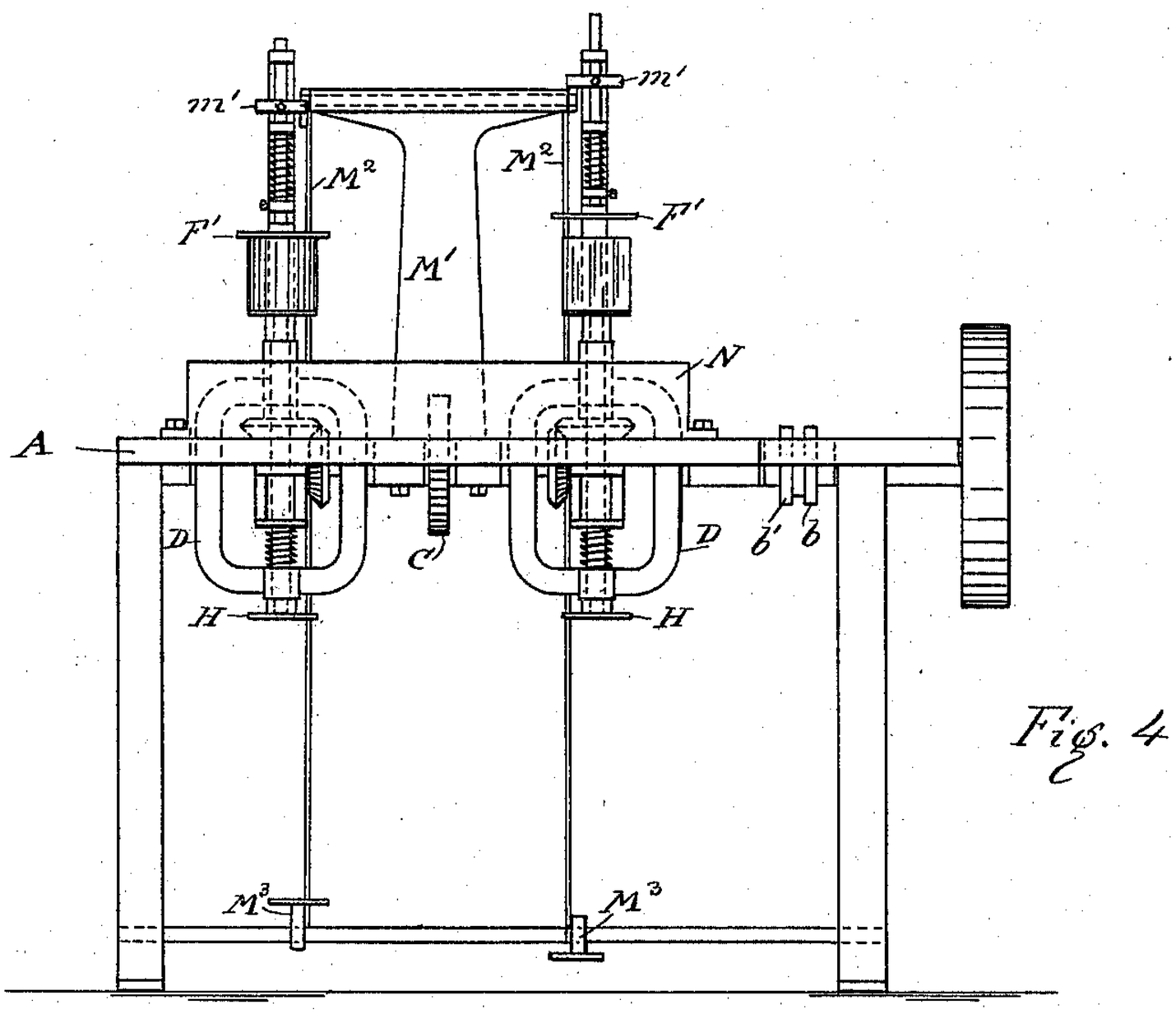

Fig. 4

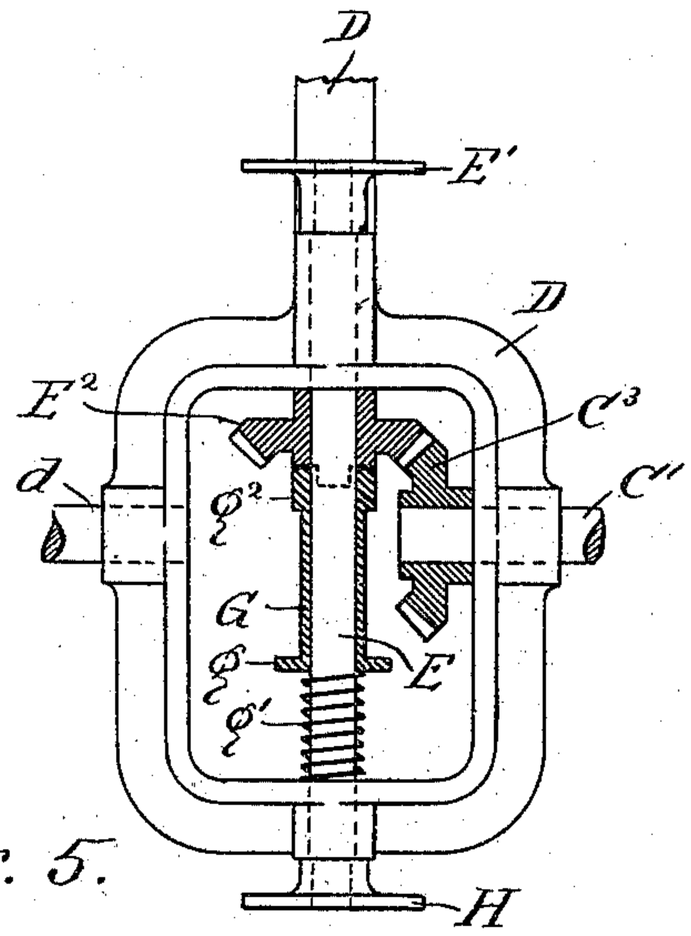

Fig. 5.

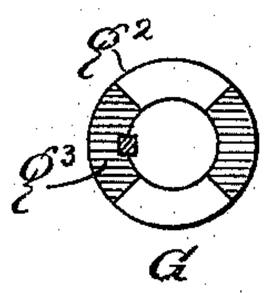

Fig. 6.

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UNITED STATES PATENT OFFICE.

EDWARD P. HOLDEN, OF CHICAGO, ILLINOIS.

CAN-SOLDERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 598,565, dated February 8, 1898.

Application filed November 13, 1895. Serial No. 568,796. (No model.)

To all whom it may concern:

Be it known that I, EDWARD P. HOLDEN, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Can-Soldering Machines; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object the production of an inexpensive can-soldering machine which will solder the ends onto the bodies of cans either round or square or any other shape in cross-section.

It consists of a combination of devices and appliances hereinafter described and claimed.

In the drawings, Figure 1 is a vertical section, with parts in elevation, of my machine. Fig. 2 is a horizontal section. Fig. 3 is a detail of the shaft-clutch. Fig. 4 is a front elevation. Fig. 5 is a detail of the tilting frame D. Fig. 6 is a detail of the end of the sleeve G.

In carrying out the invention A represents the frame, and B^2 B^3 the driving-shaft, of the machine, which will be hereinafter more fully described.

B′ is a pinion on the shaft B^3, meshing with the gear C on the counter-shaft C′.

C^2 C^3 are beveled gears on the counter-shaft C′.

The present machine is what may be termed a "double" machine—that is, there are duplicate sets of soldering mechanism, one driven by the gear C^2, while the other is driven by the beveled gear C^3. I will describe but a single set, it being understood that it may be repeated indefinitely.

D is a frame pivoted or trunnioned at *d*, carrying the shaft E, having on one end the plate E′. In the upper end of the frame D is the shaft D′, held normally in its lowermost position by the spring F and having the plate F′ on the lower end. On the lower end of the shaft E is the plate H, the edge of which when the frame D is tilted, as shown in Fig. 1, bears on the disk J, the latter being pivoted to revolve horizontally on the pivot *j*. On the shaft E is a sleeve G, provided with a collar *g*. This sleeve is engaged to the shaft E by a spline or feather, so that it will revolve with the shaft, but be capable of longitudinal movement on the shaft. Surrounding the shaft and bearing on the collar *g* and frame is a spring *g*′. The end g^2 of the sleeve G is provided with recesses or slots g^3.

E^2 is a beveled gear turning loosely on the shaft E, having on its face two pins *e*, which when the faces come together engage in the slots g^3.

K is an arm engaged to a stationary portion of the main frame, having a beveled end *k* above the collar *g*, so that when the frame D and shafts are thrown to a vertical position the collar *g*, bearing on the arm K, is depressed, thus throwing the sleeve G away from the gear E^2 and relieving the shaft E from rotation.

M is a lever pivoted to the arm M′ on the main frame, a rod M^2, pivoted to one end of the lever M, extending down to a foot-lever M^3. The outer end *m* of the lever M bears on the collar *m*′ on the shaft D′ when the shaft is in a vertical position, so that when the lever M^3 is depressed the end *m* of the lever M is elevated, carrying with it the shaft D′, as shown by dotted lines, Fig. 1, and thereby releasing the can.

N is the solder-vat, heated in any suitable manner.

It will be observed by reference to Figs. 2 and 3 that the main shaft is divided into sections B^2 B^3 and each section provided with an opposing disk *b* *b*′ and the shafts and disks being out of horizontal alinement with each other. The two disks are connected by the link b^2, thus giving the driven portion *b*′ of the shaft alternately a slow and a quick motion. It will also be observed that the gear C is four times the size of the pinion B′, so that in every one-fourth of its revolution the counter-shaft C′ is given, alternately, a quick and slow motion.

The operation is as follows: By depressing the foot-lever M^3 the operator is enabled to insert a can between the plates E′ F′, the spring F serving to force the plate F′ down to clamp the can. The operator then tilts the frame D until the edge of the plate H bears on the disk J. With the solder at the proper height in the vat the edge of the can will then just enter the solder. This tilting releases the col-

lar g from the arm K, the spring g' engages the sleeve G with the gear E^2, and the can is revolved by the counter-shaft C'. The plate H is shaped the same as the can being soldered, so that as the can and plate H are revolved the lower end of the frame D will be tilted by the plate H bearing on the disk J, thus tilting the upper end so that a given portion of the edge of the can is constantly immersed in the bath, irrespective of the shape of the can. Obviously it is desirable to immerse the long edges of the can a greater length of time than the corners, so that the variable motion above described is provided by means of the mechanism above set forth. When the can has been revolved in the solder-bath sufficiently, the operator tilts the frame to a vertical position, the arm K, bearing on the collar g, relieves the can from revolution, then the operator depresses the lever M^3 and withdraws the can.

I do not, of course, limit myself to the use of hand-power to tilt the cans down to the solder-bath, since the mechanism herein shown might be incorporated in an automatic machine.

What I claim is—

1. A can-soldering machine consisting of mechanism for clamping the can, mechanism for carrying it to the solder-bath, mechanism for continuously revolving it in the solder-bath, and rotary mechanism for varying the depth of dip of the can with respect to the bath to correspond with the shape of the can and while the can is revolving, substantially as described.

2. A can-soldering machine consisting of mechanism for clamping the can, mechanism for carrying it to the solder-bath, mechanism for revolving the can in the solder-bath and a plate shaped like the cross-section of the can, for varying the depth of dip of the can with respect to the bath, substantially as described.

3. A can-soldering machine consisting of mechanism for clamping the can, mechanism for continuously revolving the can on its own axis, mechanism for tilting it to the solder-bath and rotary mechanism for varying the depth of dip with respect to the bath as it is revolved, substantially as described.

4. A can-soldering machine consisting of a tilting frame carrying can-clamping mechanism means for continuously revolving the can on its own axis, a solder-bath to which the can is tilted, rotary mechanism for tilting the frame as the can revolves, and means for varying the depth of dip with respect to the bath while the can is revolving, substantially as described.

5. A can-soldering machine consisting of a horizontally-pivoted tilting frame carrying can-clamping mechanism, said frame carrying a revolving shaft engaged to the can-clamping mechanism, and a plate on the lower end of the shaft adapted to vary the tilt of the frame as it revolves, substantially as described.

6. A can-soldering machine consisting of a horizontally-pivoted tilting frame, a shaft journaled therein having means on its upper end to engage the can, and a plate on its lower end below the pivotal point of the frame of the shape of the can in cross-section and adapted when the frame is tilted to bear on a vertically-stationary plate, and means for revolving the shaft, substantially as described.

7. A can-soldering machine consisting of a horizontally-pivoted tilting frame, a shaft journaled therein having means on its upper end to engage the can, and a plate on its lower end below the pivotal point of the frame of the shape of the can in cross-section and adapted when the frame is tilted to bear on a horizontally-revoluble vertically-stationary plate, and means for revolving the shaft, substantially as described.

8. In a can-soldering machine a tilting frame carrying can-clamping mechanism, a shaft for revolving the can on its own axis means for revolving the shaft, and means for disconnecting the revolving mechanism said means brought into operation by the movement of the frame to bring it to an upright position, substantially as described.

9. In a can-soldering machine a horizontally-pivoted tilting frame carrying a revolving shaft, a pinion loose on said shaft a longitudinally-movable sleeve keyed to the shaft, adapted to engage the pinion when the frame is tilted, and a stationary arm adapted to disengage the sleeve from the pinion when the frame is upright, substantially as described.

10. The combination of the tilting frame carrying the clamping-shaft D', of the lever M pivoted to a stationary point and adapted to engage and lift the shaft only when the tilting frame is upright, substantially as described.

11. The combination of the tilting frame carrying the can-clamping mechanism and can-revolving shaft, the latter carrying the plate governing the tilting movement of the frame, of means for revolving said shaft and means for giving the shaft an alternately quick and slow motion, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

EDWARD P. HOLDEN.

Witnesses:

W. H. CHAMBERLIN,

DE WITT W. CHAMBERLIN.