(No Model.) 3 Sheets—Sheet 1.

A. CALLESON.

CAN HEADING MACHINE.

No. 581,018. Patented Apr. 20, 1897.

FIG. 2.

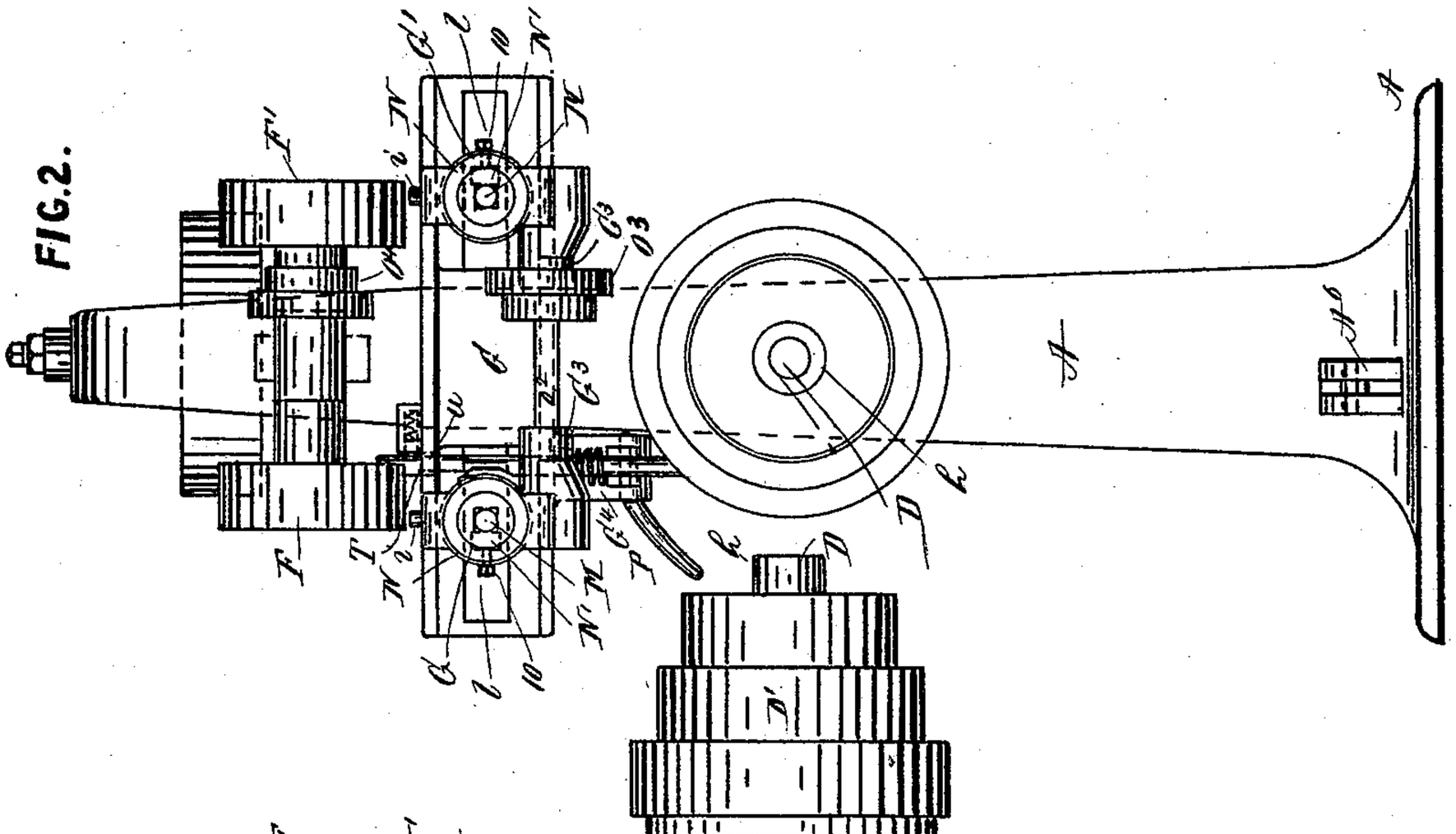
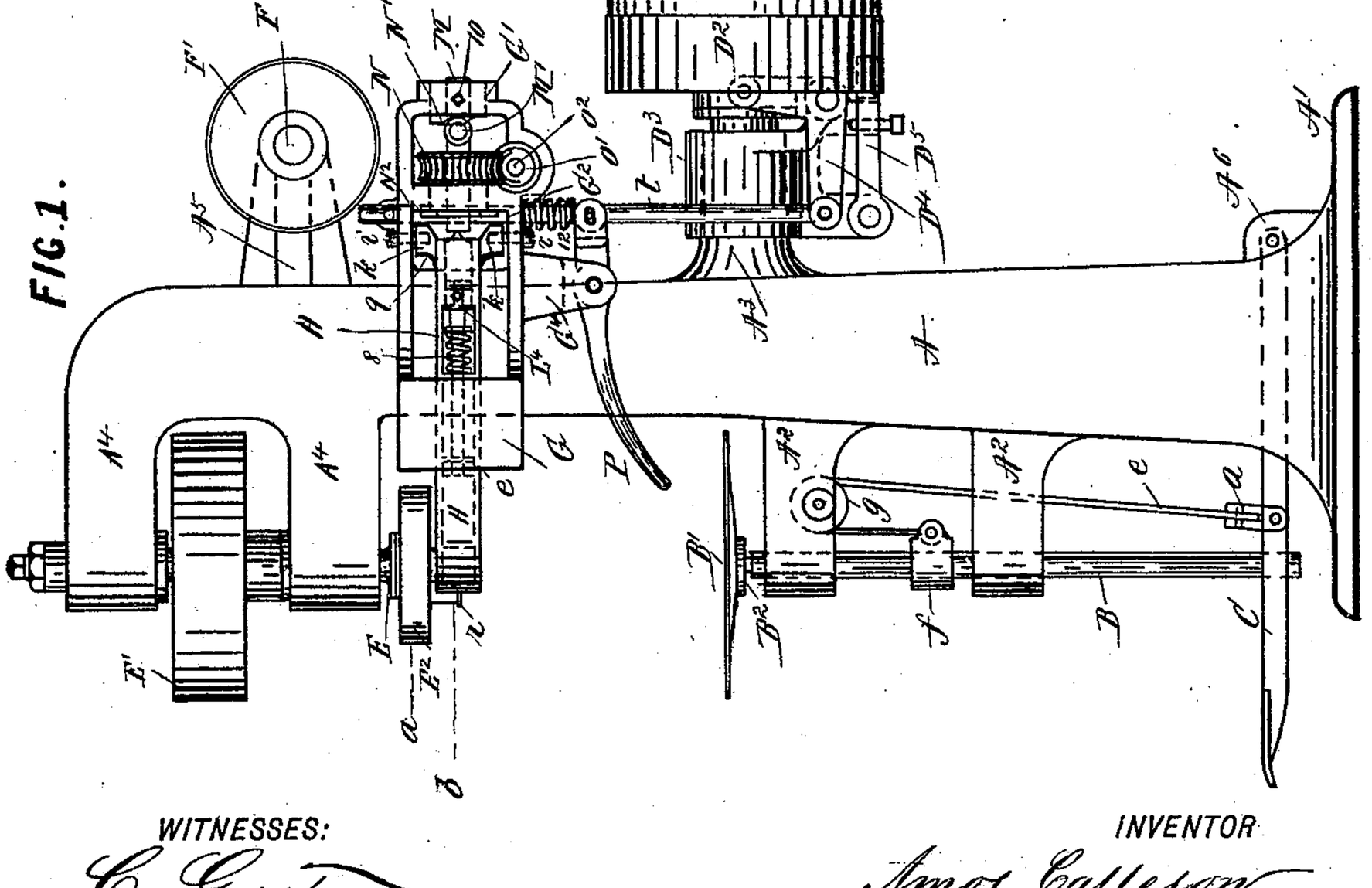


FIG. 1.



WITNESSES:

C. Gerst

M. A. Knowles

INVENTOR

Amos Calleson,

BY

Edgar Tate & Co

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 2.

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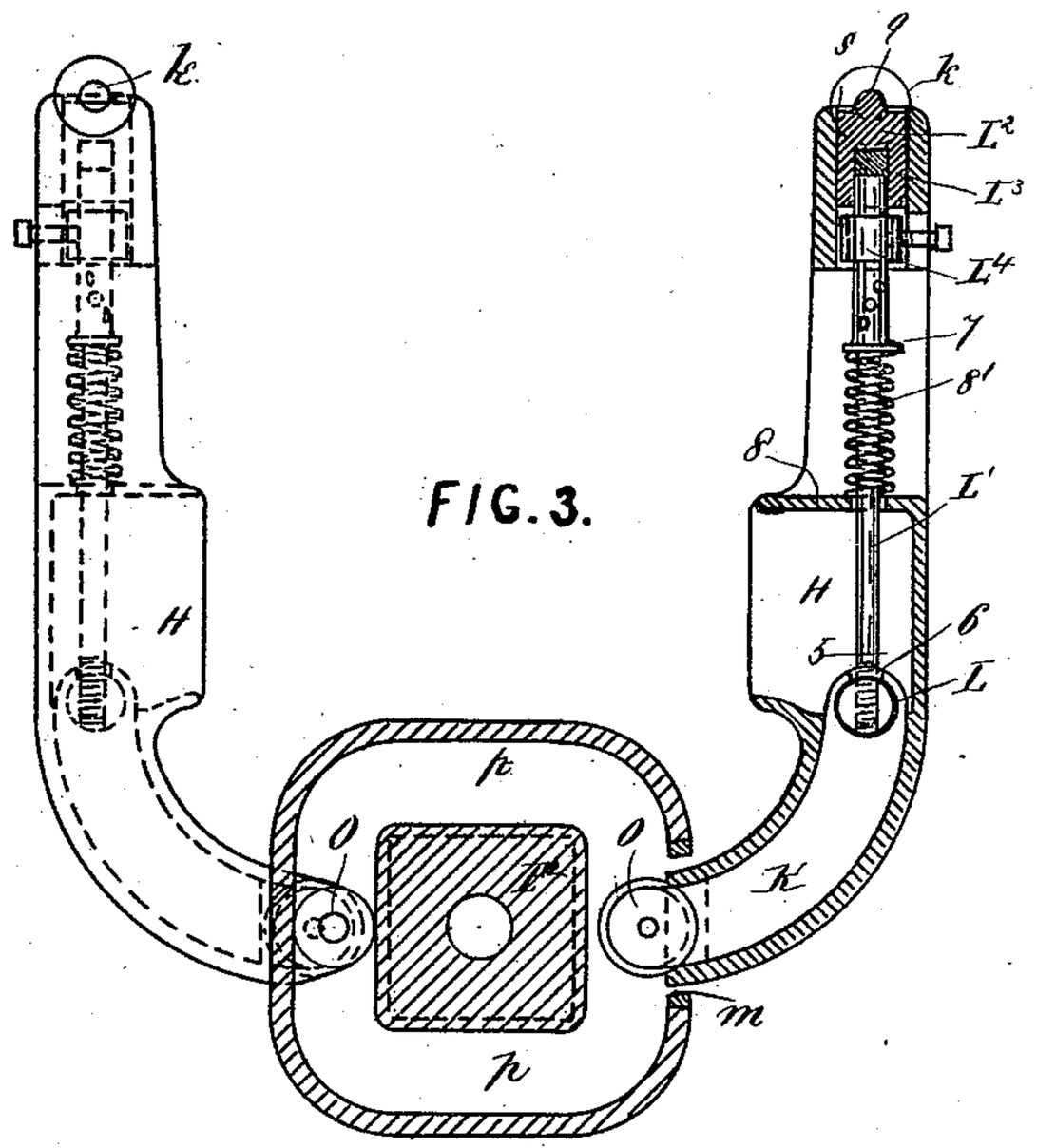

FIG. 3.

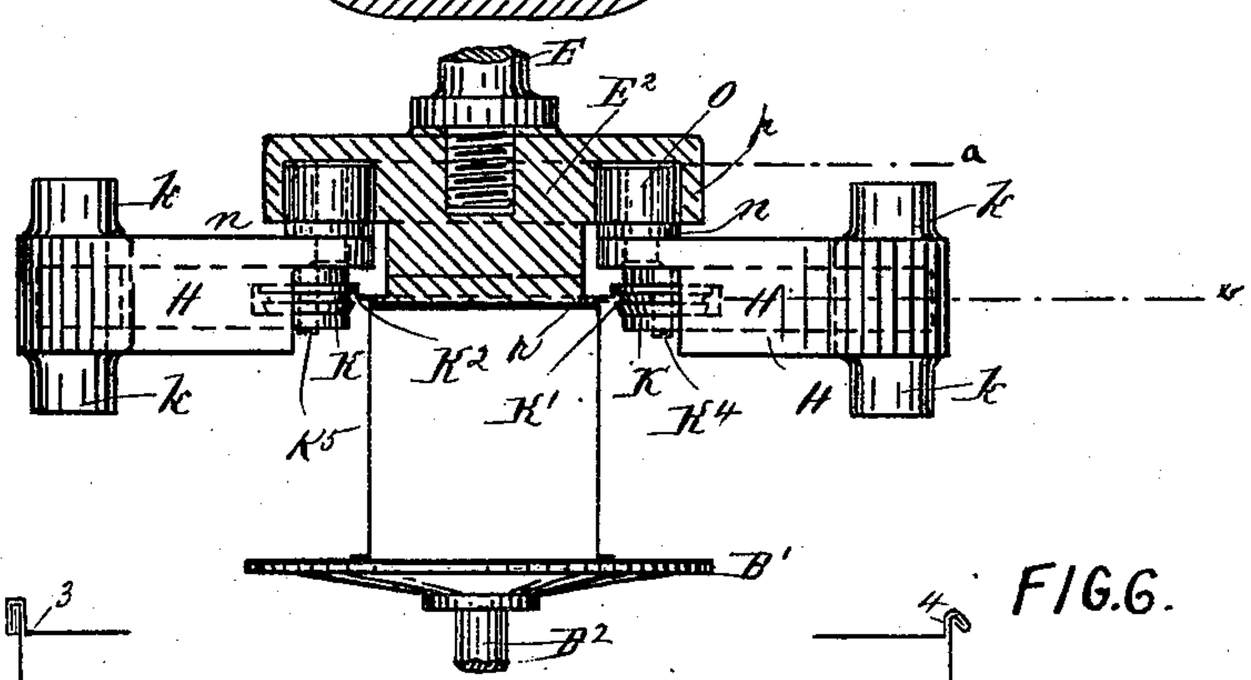

FIG. 4.

FIG. 5.

FIG. 6.

WITNESSES:

C. Gerst.

M. A. Knowles.

INVENTOR

Amos Calleson,

BY

Edgar Tate & Co

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 3.

A. CALLESON.

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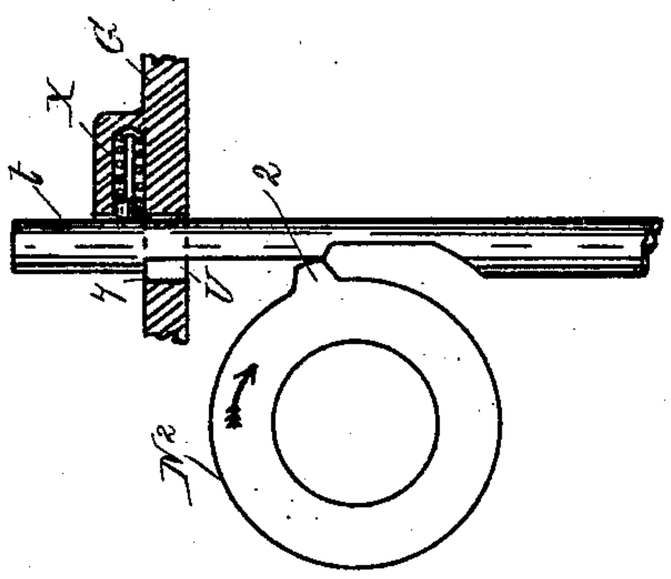

FIG. 9.

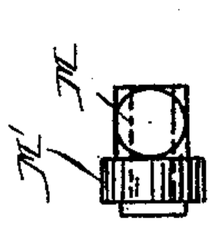

FIG. 8.

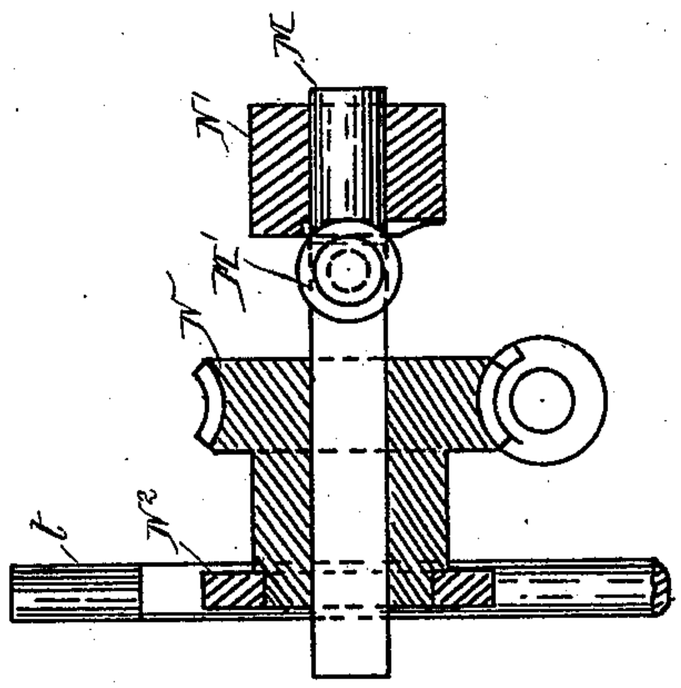

FIG. 7.

WITNESSES:

C. Smith

A. M. Church

INVENTOR

Amos Calleson,

BY

Edgar Tate & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

AMOS CALLESON, OF BROOKLYN, NEW YORK.

CAN-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 581,018, dated April 20, 1897.

Application filed October 3, 1895. Serial No. 564,484. (No model.)

To all whom it may concern:

Be it known that I, AMOS CALLESON, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Can-Heading Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters and numerals of reference indicate corresponding parts.

This invention relates to that class of can-heading machines which are usually called "double seamers," and so called for the reason that the head or bottom of the can is secured to the body by turning the flange or edge over twice, thus making the double lock or seam, which makes it impossible to separate one from the other without destroying the can.

The object of the invention is to increase the capacity of such machines and to improve the quality of the work turned out; and with this and other objects in view the invention consists in the construction, combination, and arrangement of parts hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a side elevation of my improved machine; Fig. 2, a rear view of the same. Figs. 3 and 4 represent sectional details of the construction, and Figs. 5 and 6 show the various steps of the operation of heading a can. Fig. 7 is a detailed view showing the shaft M, collar, and cam. Fig. 8 is an end view of the shaft M and roll M′. Fig. 9 is a detailed view showing the shaft *t* and tripping mechanism.

In the practice of my invention I provide a properly-proportioned rectangular column A, which constitutes the main casting or support of the machine, which is provided with a suitable base A′ and projections or shoulders A^2, A^3, A^4, A^5, and A^6. The projections or shoulders A^2 guide and support the vertical shaft B, which is movable vertically therein by means of the pedal C, which is pivotally connected with the projection or shoulder A^6, and said shaft is connected therewith by means of a yoke *a*, connected with the pedal, with which is connected a belt or band *e*, which passes over a pulley *g*, connected with the upper shoulder or extension A^2, and is carried down and connected with a yoke or band *f*, which is secured to the shaft B. On the upper end of the shaft B is mounted a disk B′, which is provided with a stud B^2, said stud being adapted to enter into the shaft B and movable therein, so as to allow disk B′ to revolve freely on said shaft as on an axis.

The projection A^3 carries the shaft D, on which are mounted the three-step cone D′ and a friction-pulley D^2, both of which revolve freely on the shaft D and are held in place by a collar *h* on the outer end of said shaft. Mounted also on the projection A^3, which constitutes a hub therefor, is a sleeve D^3, which carries a lever D^4, which operates a friction-clutch inside of said pulley D^2, and connected with the sleeve D^3 is a brake D^5, which operates to stop the machine quickly after the clutch is thrown out, as hereinafter described.

The projections or shoulders A^4 form bearings for a vertical shaft E, on which are securely mounted the pulley E′ and the chuck E^2, and the projections or shoulders A^5 are adapted to carry the shaft F, which is fixed, and on it are mounted the idlers F′, which are placed so as to securely carry a driving-belt from the pulley D^2 to the pulley E′.

The construction hereinbefore described is known in this class of machines and does not form a part of my invention, and is, as above, described briefly in order that the following description may be better understood.

On the column A is rigidly fastened a suitable casting G, to which are pivotally secured the levers H by means of screws *i*, which are formed so as to work freely in hubs *k*, which are formed on and are a part of the levers H, and said levers pass through guide-slots *l* in the casting G, which allow them to vibrate in a horizontal plane.

I will now refer to Figs. 3 and 4, of which Fig. 3 is a plan view of the levers H, showing one in section on the line *b* of Fig. 4, and of the chuck E^2, which is shown in section on the line *a* of Figs. 1 and 4 and broken away at *m;* and Fig. 4 is a front elevation of the same

construction, showing the chuck E^2 in mid-section, the lower end of shaft E in place, and the disk B′ being also shown in its working position. The levers H are provided on their front ends with studs *n*, on which are mounted the antifriction-rolls O, as shown in Fig. 4, and these rolls are guided in grooves *p*, made in the chuck E^2, and it is evident that if the chuck E^2 is revolved the levers H will vibrate out and in, following the groove *p*. Inside of the levers H are the slides K, which are curved or arc-shaped in form and are free to slide in corresponding pockets, and the outer ends thereof are forked to receive seaming-rollers K′ and K^2, of which the roller K′ is the forming-roller of the seam, and the roller K^2 the locking-roller, and these rollers K′ and K^2 are pivoted on studs K^4 and K^5, respectively, which are secured into the slides K. Normally these rolls are drawn back, as shown in Fig. 4, which allows the bottom or head of the can which is to be seamed to enter onto the flanged lower end *r* of the chuck E^2, and said flange and the inner edge of the cam-groove *p* are made the exact shape and size of the can to be seamed or headed, and the can bottom or head being recessed, as shown in Figs. 5 and 6 at 3 and 4, is supported by the flanged lower end *r* of the chuck E^2 against a side thrust or sidewise movement of the seaming-rollers K′ and K^2.

The working portions of the rollers K′ and K^2 have a diameter such that when they are in the extreme forward working position their centers coincide with those of the antifriction-rolls O, and the lower ends of the slides K are bored out to receive the cylindrical plugs L, which have a radial hole through the center thereof, tapped out to act as nuts for the threaded portions 5 of the rods L′, corresponding holes 6 being formed in the slides K a little larger than the rods L′ to allow for side play thereof.

The rods L′ have shoulders 7 formed thereon, and between said shoulders and the ribs 8 of the levers H are springs 8′, which normally force the levers K back to the position shown in Fig. 4. The rear ends of the rods L′ enter into pockets bored in the blocks L^2, at the bottom of which are rubber blocks L^3, which are somewhat elastic, and the collar L^4 operates to keep the rod L′ from rotating. The blocks L^2 are cylindrical and slide freely in holes *s*, bored in the rear ends of the levers H, and are provided with projections 9, which bear against the inner ends of the shafts M, as shown in Figs. 1 and 2, said shafts being square and adapted to slide through square bearings formed axially through the worm-wheel N, which is supported in hubs G^2 of the casting G, and said shafts are also cylindrical on their outer ends and supported by cylindrical bearings in the collars N′, which fit into hubs G′ of the casting G, and are held in place by set-screws 10.

The antifriction-rolls M′, pivoted to the shafts M, bear against cam-surfaces formed on the inner end of the fixed collars N′, said surfaces being adapted to limit the outward motion of the shaft M, and therefore, also, the backward motion of the slides K, through the connections just described.

The portion of the shaft M passing through the hub of the worm-wheel N being square, it follows that if the wheel N is rotated the shaft M will rotate also, and having a rolling contact with the cam-surface of the collar N′, by reason of the roll M′, said shaft M, together with the slides K, will be given a vibrating lateral motion. The said cam-surfaces are constructed and timed so as to alternately throw the rolls K′ and K^2, which are pivoted to the slides K, into working position, and the roller K′ acts first, finishing the seam as far as shown in Fig. 6. Then said roll falls back, and at the same instant the roller K^2 comes forward and finishes the seam completely, as shown in Fig. 5. Then the roller K^2 is thrown back and the machine is automatically stopped by a tripping mechanism hereinafter described.

The worm-wheels N are driven by worms O′, mounted on the shaft O^2, which passes through suitable bearings G^3 of the casting G, and are in turn driven by the cone-pulleys O^3 and O^4 through the medium of the belt connection, the pulley O^3 being secured to the shaft O^2 and the pulley O^4 mounted on the shaft F. A rod *t* is connected with the lever D^4 and with a hand-lever P, pivotally connected with the casting G through the lug G^4, said rod *t* passing through an aperture or hole U in the casting G, and near the upper end it is cut away on one side, as shown in Fig. 8, so as to form a step Y, and a spring X, pocketed in the casting G, bears against it and tends to throw it forward, so as to rest on the top of the casting G when in its highest position. A projection Z is formed on the nut N^2, already described, and the latter, being part of the hub of worm-wheel M, is timed so as to strike rod *t* and throw the step Y off its bearing the instant the seaming operation is finished and the spring 12, confined between the lower part of the casting G and the end of the lever P, connected to the rod *t*, forces it down and with it the bell-crank or lever D^4, to which the lower end of the rod *t* is pivoted, which breaks the clutch connection of the friction-pulley D^2 with the step-cone D′, which stops the machine.

The operation of the machine is substantially as follows: Having provided a suitable belt connection between the pulley E′ and the friction-pulley D^2, also between pulleys O^3 and O^4, and the friction-pulley D^2 being at rest and the step-pulley D′ running, it being driven from the main source of power, the body of a can is entered onto the recess of the bottom and placed on the disk B′, as shown in Fig. 4, and then the disk is raised upward by the foot-lever C and the bottom of the can

is entered onto the flange r of the chuck E^2, as already explained, and both are held firmly in that position by a continued pressure on the foot-lever C. The hand-lever P is then depressed, as shown in Figs. 1 and 2, which operation throws into action the friction-clutch and starts the machine. Rod t then has the position as shown in Fig. 9. The lever P is held in said position for a few moments, while the projection 2, Fig. 9, revolves downwardly out of contact with the rod t, and the step Y is thrown onto its seat on the casting G by the spring X and keeps the rod t up automatically, after which the hand is removed from P, and the rod remains in this position till the projection 2, and consequently the shafts M, carrying the rolls M′, have made one complete revolution, when it is again tripped by the same and, through the connection with the lever D^4, stops the machine, as before explained. It will be understood that while the shafts M make one complete revolution the rolls M′ alternately bear against the cam-surface formed on collars N′, giving requisite motion to the securing-rolls K′ and K^2, as already described.

It will be understood that the cam-groove in the chuck, which is also called the "pattern-cam," as it controls the motion of the levers H to correspond with the shape of the can, can be made to suit any-shaped can it may be desired to double-seam within reasonable limits and that the action of the machine must in all cases be practically perfect.

When the seaming-rolls K′ and K^2 are at their extreme working position, the inner ends of the shafts are thrown forward to meet the center line of the pivots i, or, in other words, the points 9 of the blocks L^2 are forced back to the center of motion of the levers H, and the pressure they exert on the seaming-rolls K′ and K^2 through the above-described connection is varied by the vibration of the levers H, thus assuring a perfect seam.

Another feature which I have found to be of great advantage is the arrangement of the cushioned pressure, as shown at L^3, which perfectly overcomes the trouble of slight irregular wear of the pattern-cam or any irregularities in the thickness of can to be secured.

My improved machine can be used for crimping instead of for double-seaming by substituting crimping-rolls instead of the rolls K′ and K^2 and by reversing the collars N′, on the outer end of which suitable cam-surfaces may be formed, so as to move both crimping-rolls into action at the same time, so that the two crimping-rolls, as is the case with ordinary crimping-machines, being arranged oppositely, it follows that the necessary time for crimping is reduced by one-half, as one-half of a revolution of a can will cause the rolls to act or move completely around the same.

It will thus be seen that the construction of the machine and its parts are such as to allow it to run at a high speed, the vibrating levers being perfectly balanced and the clutches employed being of the class known as "friction-clutches," which avoid destructive jar in starting the machine.

Having fully described my invention, I claim and desire to secure by Letters Patent—

1. The combination with a chuck and means for revolving the same, of a pattern-cam carried thereby, a vibrating lever controlled by said cam, a forming-roller, the support of which is adapted to slide in a curved pocket in said lever, and actuated by suitable contact with a fixed cam-surface, substantially as described.

2. The combination of a chuck and means for revolving the same, of a pattern-cam carried thereby, oppositely-arranged vibrating levers controlled by said cam, a forming-roller, and a locking-roller, the supports for which are adapted to slide in curved pockets in said levers, and actuated by suitable contact with said fixed surface, substantially as described.

3. The combination with a chuck and means for revolving the same, of a pattern-cam carried thereby, vibrating levers, a forming-roller, a locking-roller, curved roller-supports, which bear against fixed cam-surfaces and automatically move the rollers into working position, substantially as described.

4. In a can-heading machine, the combination with a chuck and means for revolving the same of a pattern-cam carried thereby, oppositely-arranged vibrating levers, controlled by the pattern-cam and curved slides which are automatically operated at the center of motion of the said levers, substantially as shown and described.

5. In a can-heading machine, the combination of a chuck and actuating mechanism thereof, of a forming-roller and a locking-roller, and means for guiding the same while in working position, consisting of two curved slides carried by vibrating levers and roller-supports, which bear against the same, and alternatively move them into working position by suitable cushion contact with fixed cam-surfaces, substantially as described.

6. In a can-heading machine, the combination of a support, a chuck mounted thereon and means for revolving the same, a forming-roller, and a locking-roller, curved slides which support the rollers, and means for guiding said slides, laterally-movable roller-supports, which bear against fixed cam-surfaces and are adapted to move the rolls alternately into and out of the working position, said parts being constructed, combined and arranged, substantially as shown and described.

7. In a can-heading machine, the combination with a support, of a chuck mounted thereon and means for revolving the same, a pattern-cam carried thereby, a forming-roller, and a locking-roller, curved guiding-slides which support the rollers and means for guid-

ing said slides, and laterally-movable roller-supports which bear against fixed cam-surfaces and automatically move the forming-rollers into a working position, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 1st day of October, 1895.

AMOS CALLESON.

Witnesses:
C. GERST,
K. ENSLIE.