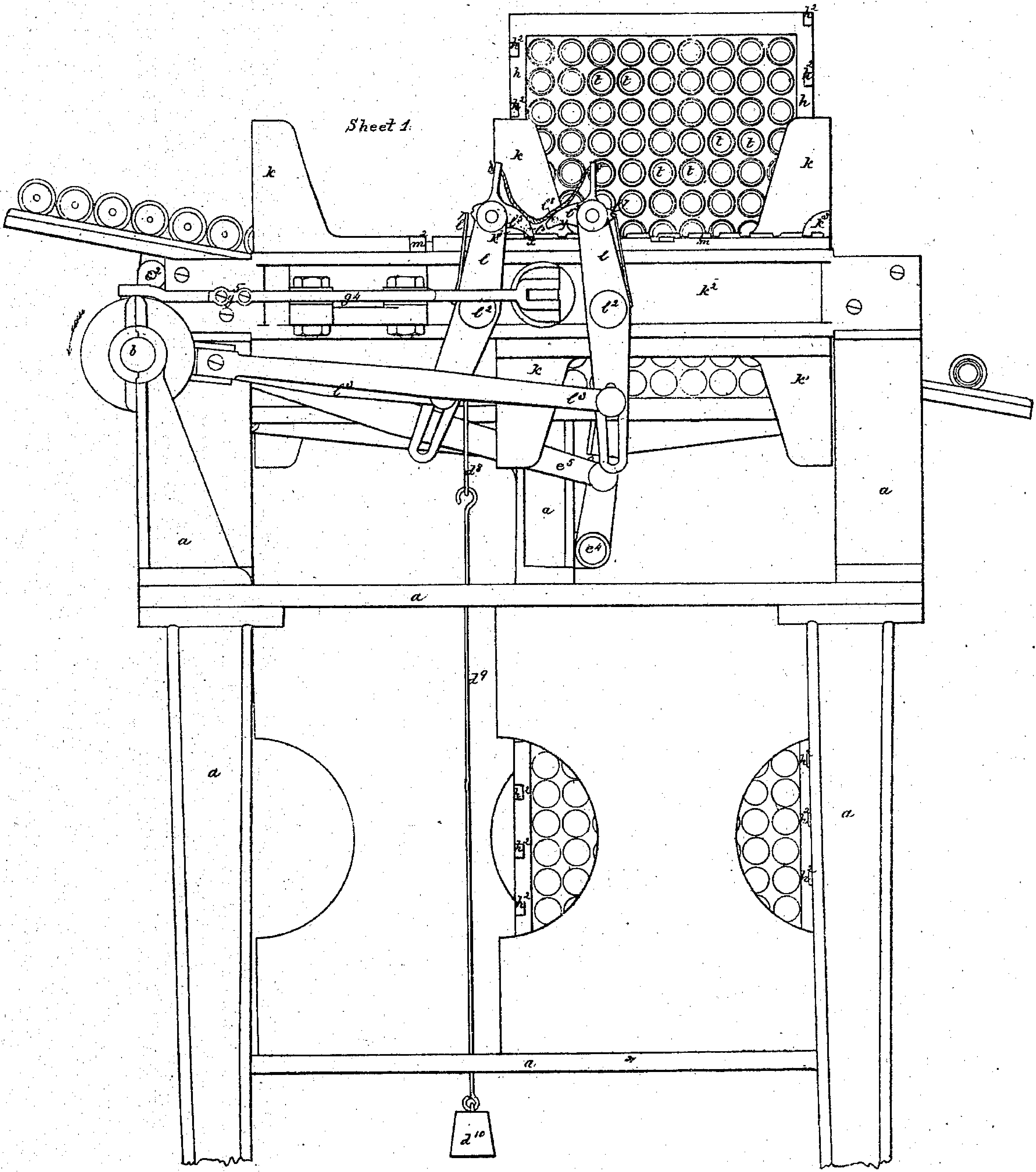
H. Conant. Sheet 1. 4 Sheets.

Spool Labeling Mach.

No. 35562. Patented Jun. 10. 1862.



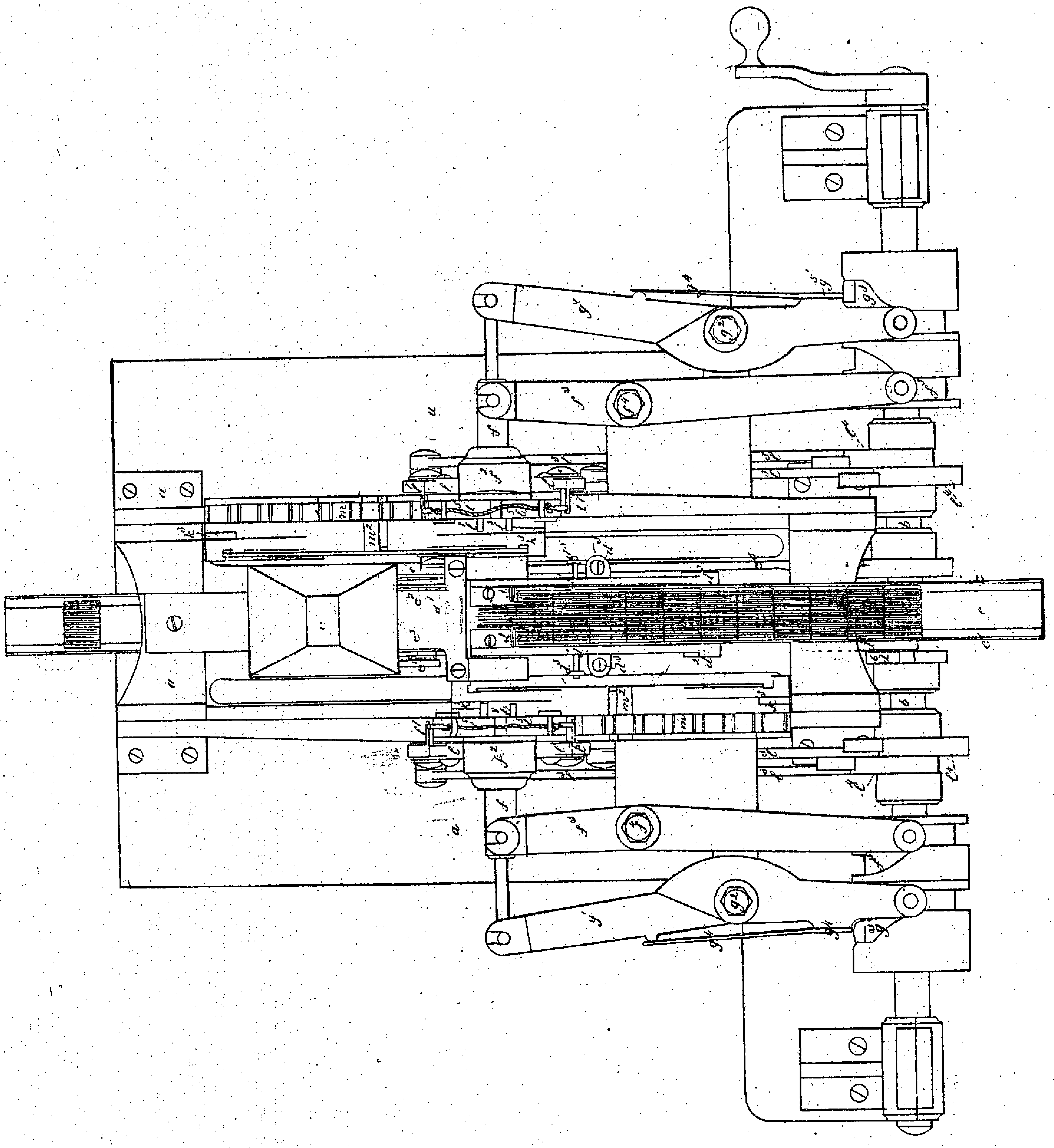
Witnesses
J. P. Arnold.
J. C. Lick.

Inventor
Hezekiah Conant.

H. Conant. Sheet 2. 4 Sheets.

Spool Labeling Mach.

No. 35562. Patented Jun. 10. 1862.



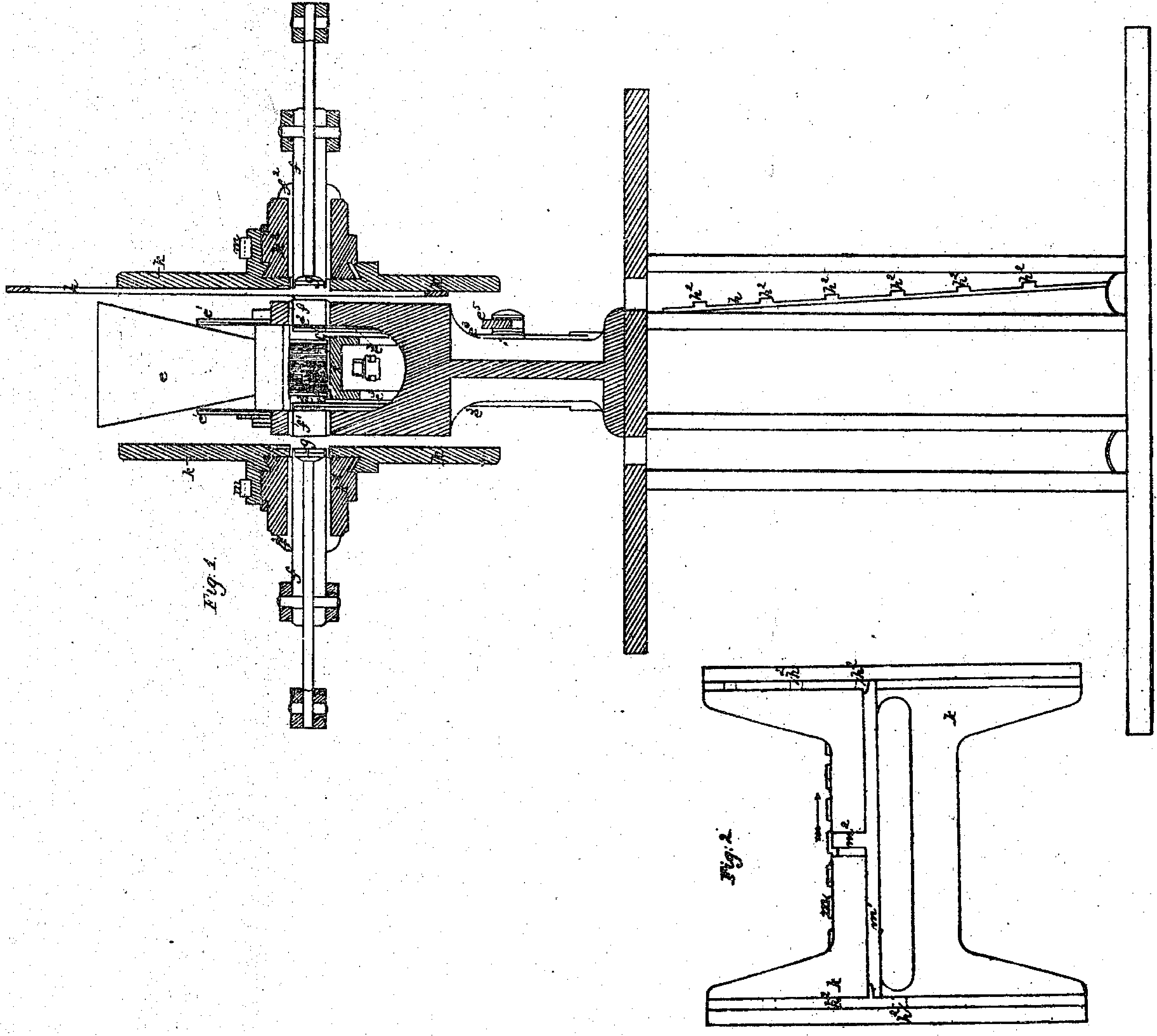
Witnesses
J. R. Arnolde
J. O. Fitch

Inventor
Hezekiah Conant

H. Conant. Sheet 3. 4 Sheets.

Spool Labeling Mach.

No. 35562. Patented Jun. 10. 1862.



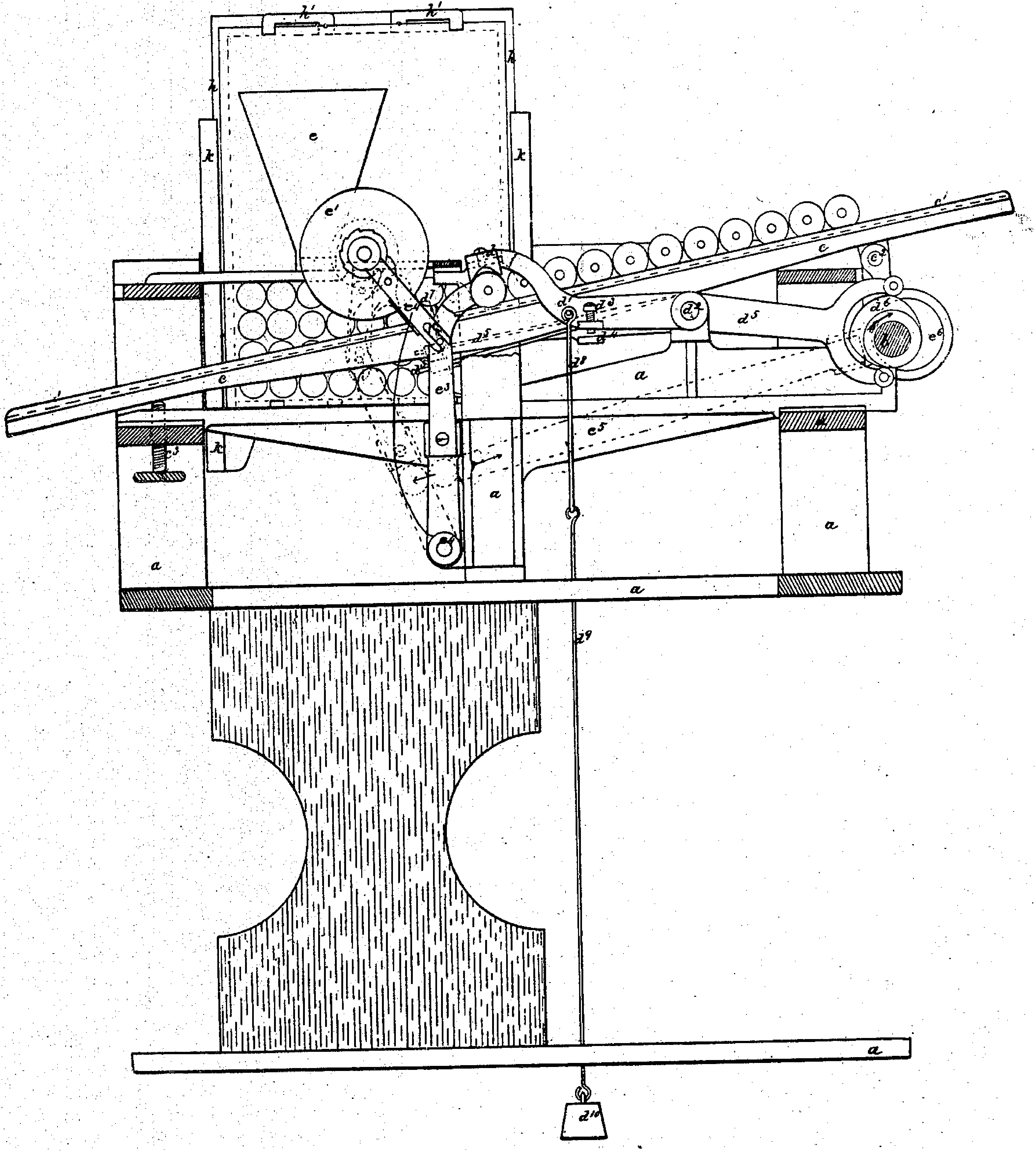
Witnesses:
J. R. Arnolde
J. A. Fitch

Inventor:
Hezekiah Conant

H. Conant. Sheet 4. 4 Sheets.

Spool Labeling Mach.

No. 35562. Patented Jun. 10. 1862.



Witnesses
J. R. Arnold
A. Fitch

Inventor
Hezekiah Conant

UNITED STATES PATENT OFFICE.

HEZEKIAH CONANT, OF WILLIMANTIC, CONNECTICUT, ASSIGNOR TO THE WILLIMANTIC LINEN COMPANY.

IMPROVEMENT IN MACHINES TO LABEL THREAD-SPOOLS.

Specification forming part of Letters Patent No. **35,562**, dated June 10, 1862.

To all whom it may concern:

Be it known that I, HEZEKIAH CONANT, of Willimantic, in the State of Connecticut, have invented a new and useful Machine for Labeling or Ticketing Spools or Bobbins or Applying Labels upon the Ends of Small Boxes and similar Articles; and I hereby declare that the following, taken in connection with the drawings, is a full, clear, and exact description thereof.

In the drawings, Sheet 1 is a side elevation of the machine. Sheet 2 is a plan thereof. Sheet 3, Figure 1, is a vertical cross-section through the machine; and Fig. 2, on the same sheet, is an elevation of the ticket or label carriage. Sheet 4 is a vertical longitudinal section through the machine.

This machine was specially devised for ticketing spool-cotton, and may without change be used for ticketing other articles of cylindrical form, and with certain formal change and additions may be adapted to the ticketing on one or both ends of small boxes, packages, &c., of square, oval, or polygonal cross-section.

The machine, as a whole, is made up of several sets of apparatus, each of which have certain functions, and all of which, acting in combination, produce the desired results. These sets of apparatus, each of themselves or in combination with one or more of the others, also produce certain distinct steps in the process, and in so far as they do so may be usefully employed either in building a less complete machine or in connection with sets of apparatus which are not the equivalents of those described, so as to make up a contrivance having certain features of my present invention, and as a whole useful for other purposes.

The sets of apparatus which compose the machine are, first, a feeding apparatus whose function is to feed the articles to be ticketed; second, a holding apparatus to hold the articles in proper position to be ticketed; third, a pasting apparatus to apply paste or gum or other adhesive matter to the tickets; fourth, a punching apparatus to cut the tickets out of the sheet on which they are printed; fifth, a device for holding the tickets after they are punched out and while being pasted or gummed and for applying them to the spools or other articles, which I call the "applying apparatus." The sixth or last set of apparatus I call the "ticket-presenter." This contrivance consists of a frame for holding the sheets of tickets, which is caused to move in two directions, so as to present the tickets in proper succession and position for the action of the punch. These apparatus may be combined in various ways and forms to produce the result desired, and the machine shown in the drawings is an embodiment of them, in a manner and under forms which I have by experimental trials proved to be practical.

The machine, as a whole, is assembled together on a frame or bed-plate, which is lettered *a a* in the drawings, and all the motions of the various parts are derived from a single revolving shaft, *b*.

The feeding apparatus consists of an inclined trough or way, down which the spools roll by force of gravity, and of a double gate, which permits one spool to pass and stops another. The trough is shown at *c*. Its sides c' (shown in section, Fig. 1, Sheet 3) are adjustable, and can be moved toward or drawn away from the center of the trough, so as just to embrace spools of different lengths, and the trough at its receiving end is mounted on a pivot, c^2, while it is held up at its discharging end by a set-screw, c^3. By this arrangement the height of the trough can be varied at the point where the punches and applying apparatus act, so that the center of spools of different diameters may be presented opposite to the center of the ticket. One of the gates is composed of two pieces, *d d*, forked on their lower sides, for a purpose hereinafter specified. These pieces are attached to arms d' d', pivoted at d^2 d^2. These arms are one on each side of the trough, and the pieces *d* operate above the trough. Each arm has a set-screw, d^3, (see Sheet 4,) and the ends of these screws lie just above the lugs d^4 d^4. These lugs project out from a lever, d^5, pivoted at d^2, and having on its end a fork operated by a cam, d^6. This lever extends under the trough, carries and moves the lugs, and is prolonged, and has projecting upward from it a gate, d^7. This gate at certain parts of its motion sticks up above the upper surface of the trough when d^5 is in the position shown by dotted lines, and at other times descends below it, passing through a hole in the bottom of the trough. Each of the arms d' has a pin projecting horizontally from it, and a wire stirrup, d^8, is attached by one end to each of these pins. This stirrup has hooked to its arch a rod, d^9, carrying a weight, d^{10}.

The holding apparatus is made up of the trough and the pieces d, which are forked, as before stated. These forks press down on top of a spool and center it truly opposite the applying mechanism, the forks being held down by the weights d^{10}. These forks might both be in one piece; but there are often found certain differences in diameter between the two ends of the same spool, and I am enabled to center them more truly by using an indedependent fork for each end. In order to complete this description of the holding and feeding apparatus it should be stated that the gate d^7 can be slid along the lever d^5 and adjusted at any proper place, so that the distance between its edge nearest the forked pieces and the center of these forks shall be equal to the diameter of a spool and a half. (See Sheet 4.) A positive spring-connection might be made between the lever d^5 and the fork-pieces; but I prefer to lift them by the lugs acting on the screws d^3 and to depress them by the weights, as their range of lifting movement can thus be altered to suit any diameter of spool, and their range of descent is measured by the spool itself. The spools are to be placed in the trough by hand. They will run down till one of them strikes the forked pieces. These will lift by the revolution of the cam, and at the same time the lower gate, d^7, will lift, one spool will be stopped against it, and the second spool will be stopped by the first. The lower gate and the forked pieces will then descend together, and before the lower gate descends below the center of the first spool the forks drawn down by the weights will catch the second one, hold it down against the trough and center it opposite the applying apparatus. The first spool will roll out of the machine. When a ticket has been applied the gates will rise, the second spool will be released, will roll against and be stopped by the lower gate, a third spool will roll under the forks, will be caught, held, and centered by them, and, as the lower gate descends, the second spool will roll out of the machine.

This apparatus acts to feed very like that used for feeding screws, one by one, in screw machinery, but has the new feature that one of the feeding-gates becomes the moving jaw of the holding apparatus. The spools may rest upon a level trough or one inclined upward, and be punched through by a slide vibrating at each time the diameter of one spool; or in some cases the holding apparatus may be so arranged and moved that the spools may be inserted by the fingers one by one in the grasp of the jaw. Motion may be communicated to the gates and fork pieces in various ways; but I prefer that shown in the drawings.

The pasting apparatus consists of a hopper to contain paste, gum, &c., and brushes to apply adhesive matter to the tickets after they are punched out. They may apply it to the spool-heads; but I prefer the precise method described. The hopper is shown at e. It has two openings at the lower end, one at each side. These openings are closed by two disks, e' e', that embrace the hopper, and are covered on the side nearest the openings with cloth, felt, or other proper substance. These disks are so mounted as to turn with a shaft to which they are attached, and one, and consequently both of them, receive a slow revolving motion from an arm, e^3, by means of a pin, a ratchet-lever, pawl, and ratchet wheel. (See Sheet 4.) This arm is pivoted at e^4, and moved by an eccentric-rod, e^5, actuated by an eccentric, e^6, on the main shaft. The arm e^3 is forked and rises up on both sides of the trough, and at the end of each fork is mounted a paste-brush, e^2, made of any proper material. These brushes, as the arm e^3 (see dotted and full lines showing e^3) vibrates, vibrate with it from the disks to the place where a punched ticket is held. As the disks revolve they carry paste with them out of the hopper. The brushes then supply themselves from it and transfer their charge to the tickets, which are held on the points of the appliers. The brushes then retreat and take a new charge of paste. The brushes are almost as large as the tickets and have a small slit cut in their stocks, if necessary, so that part of them can vibrate past the points of the appliers. These brushes can be moved in any way, so long as they take paste or gum, &c., from some reservoir and carry it to and apply it upon tickets or spools. This is their function, and the movements which they go through in performing it or the manner in which their movements are produced is immaterial.

The punching apparatus consists of two hollow punches, f f, acting in connection with dies f' f' and sliding in guides f^2 f^2. The guides, punches, and dies are in the present machine so made that they can be removed and others substituted for them, so that the same machine may work upon differt sizes and shapes of tickets. These punches are moved by levers f^3 f^3, pivoted at f^4 f^4, which in their turn are vibrated by cams f^5 f^5, secured on the main shaft. These cams are so constructed as to move the punches out of the guides to the dies and into them far enough to punch a ticket and then to retreat again each time that a spool is caught and centered, and they may receive this motion in any way, the function of the punches being to punch a ticket out of a sheet and into a die.

The applying mechanism consists of two disks, g g, nearly of the same superficies as the ticket, secured to rods which vibrate inside of the punches, and are actuated by levers g' g', pivoted at g^2 g^2, and operated by cams g^3 g^3 on the main shaft. The rods are guided by the holes in the punches, and each applier has one or more small pins projecting from it toward the spool to be ticketed. The levers that actuate the appliers are made in two pieces, each pivoted at g^2. The part nearest the rods of the appliers is kept up against the other part by a spring, g^4, secured to that other part at g^5. There is a stop on the piece of the lever nearest the cam, and the spring forces the part nearest the rods against this stop. When the appliers are forced toward each other and the spool they are moved up by the springs, and when the appliers with paper or tickets on them strike the spools the springs yield; but the final motion of the appliers away from the spool is, in consequence of this construction, a positive motion. A spring-lever or a spring in the rod might be substituted for this arrangement. The cams that move the appliers are so shaped that these latter advance with or just after the punches impale the punched tickets on their points and press the ticket against the paste-brushes, which are then just opposite the punched-out tickets. The appliers then remain stationary an instant and the brushes move away toward the hopper. The appliers then advance farther and stick the tickets on the spool. When this is done they retreat and advance again in time to ticket the next spool in succession. If the brushes are mounted on springs, the rest or stop in the movement of the appliers may be dispensed with. The motions of the brushes may also be so timed that they shall sweep over tickets held by the appliers and then retreat; but I prefer to press the ticket against a stationary brush as the best way of covering the ticket with paste. The appliers may receive their motion by any appropriate devices, so long as they move to an extent and at times so as to produce the effect above described.

The tickets applied by this machine are to be printed on sheets, (Sheet 1, at *t t t*, where they are represented by pink lines,) and the ticket-presenter is a frame, *h*, in which the sheets are to be fastened by springs, such as *h′*, (see Sheet 4,) or by pins or in any other proper way, and each frame is to have projecting from each of its vertical sides a series of stops, h^2 h^2 h^2. These stops are spaced from center to center at a distance equal to that from the center of one ticket to the center of another ticket in the next row but one below, and it will be seen that the stops on one side of the frame are opposite the intervals between the stops on the other side. These frames must have motions in two directions, and are free to slide up and down in grooves or guides in carriages *k k*. These carriages lie one on each side of the spool to be ticketed and slide on stationary ways k^2 k^2. Each carriage advances toward or retreats from the main shaft through a distance equal to that from the center of one ticket in the sheet to the center of the next ticket in the same horizontal line, commencing to move after one ticket has been applied and completing its motion before the next ticket is punched out of the sheet. In order to force the carriages to move thus there are two levers, *l l l l*, on each side of the machine. These levers are pivoted at l^2 l^2 l^2 l^2 and are caused to vibrate by eccentric-rods l^3 l^3, each of which is actuated by an eccentric, l^4, on the main shaft. There are four eccentrics, four rods, and four levers in all when spools are to be ticketed on both ends. When they are to be ticketed on one end only the frames, carriages, levers, rods, &c., may on one side of the machine be dispensed with. The eccentric-rod attachments to the arms are adjustable, so that the extent of motion of the carriages may be altered to suit different diameters or sizes of tickets. The eccentrics are so set upon the main shaft that the two arms on the same side of the machine move at the same time in opposite directions. Each arm has pivoted on its upper end a pawl, l^5. Each pawl has projecting upward from it an arm, (see Sheet 2,) and the upper ends of these arms on the same side of the machine are connected by cords or chains l^6. Each pawl has also a notch in it, into which may take a spring, l^7, attached to each of the arms *l*, and when these springs are in the notches they hold the pawls up and prevent their action. Each pawl has also projecting from it inward toward the spool-trough a pin, l^8. These pins are acted upon by projecting inclined planes or curved cams k^3 k^3, which are attached to the carriage *k k*. Each carriage has upon it a rack, *m*, which is free to slide a short distance upon the carriage, and these racks are attached to bolts *m′ m′* by connections m^2 m^2. These bolts slide in grooves on the sides of the carriages which contain the frames, (see especially Fig. 2, Sheet 3,) and one end or other of the bolts lies under one of the projections h^2 of the frames. The frame is thus held up and one row of tickets is in proper line to be punched. When all the tickets in a row are punched out, then the bolt is vibrated and the frame drops until it is caught by another projection, h^2, on the opposite side of the frame, thus holding the frame in proper position for punching out the row of tickets next above.

From what has been described it will be seen that the ticket-frames have motion in two directions—first, with their carriages along the machine from front to rear, and, second, downward—the first motion taking place after each ticket except the last in a horizontal row has been punched and the second motion taking place after the last ticket in a row has been punched, and thus presenting the first ticket in the row next above. Under the construction just described these motions are produced as follows: Each one of each pair of arms *l* is moved away from its fellow as the punches and appliers are doing their work, and when the punches and appliers are backed out of the sheet of tickets, then each arm commences to move toward its fellow. While so moving, the pawl on one arm will be held up by one of the springs l^7, and will do nothing, and the pawl on the opposite arm will be free to act, Sheet 1, and will move the rack, and consequently the carriage and frames, a distance equal to that from center to center of tickets, and when the motion is finished the ticket next to that punched, and in the same horizontal row, will be in proper position for punching. The pawl in acting position will thus continue to traverse the carriage on its ways until a whole row is punched out and applied, when it will arrive at a position such as is shown in Sheet 1 at x. As the acting-pawl retreats from this position, as if getting ready again to move the carriage, its pin l^8 rides up on the cam k^3, and as it rides up the acting end of the pawl is lifted and caught by the spring l^7 taking into the notch. As the pawl is lifted by its pin the cord or chain l^5 tightens, and the pawl which was not acting is, by the cord pulling upon it, released from its detaining-spring. This latter pawl, which is lettered y on Sheet 1, then drops and comes into action. As this pawl y moves toward its fellow it takes into one of the notches of the rack and moves the rack toward the main shaft, but does not move the carriage. The rack, however, slides on the carriage, carrying with it the bolt, and the bolt is thus withdrawn from under one of the projections h^2, and the frame, with the tickets, falls until the next projection on the other side brings up on the other end of the bolt. A ticket just above the one last punched is thus brought opposite the punch, and when it is punched pawl y again acts on the rack and now moves the carriage with it, as the bolt has brought up against that end of the carriage toward which the rack is moving. Pawl y now traverses the carriage until a horizontal row of tickets is punched out. It is then lifted out of action by an inclined plane acting on its pin. As it is lifted out it pulls pawl x into acting position, and the latter on its first acting motion traverses the rack and bolt on the carriage, and causes the frame to drop again in position for the punching out of another row of tickets. Both sets of pawls act in the same way, and a frame with a sheet of tickets set in readiness is to be dropped on top of the frame in action before it drops below the punches. When the uppermost row in one frame is punched out, the bolt slides and releases it entirely, and it drops out of the machine. The bolt as it vibrates, however, catches under the lowermost projection, h^2, of the new frame, and thus holds it in a proper position for the punch.

As I have described the action of each set of apparatus, I do not deem it necessary to describe their combined action at length, but only state as follows: that spools are fed and centered one by one; that when centered they are ticketed by the action of the appliers, the punches having previously punched out the ticket, and either the ends of the spools or the tickets themselves having been pasted or gummed before the ticket is applied, and when the ticket is applied the spool rolls or is shoved out of place and another spool is fed and centered. As the spools are ticketed in succession, the tickets are, in the manner before described, presented in proper order and in the right place for the action of the punches.

The sheets of tickets in this machine have the same motion substantially as the sheets of copper in some percussion-cap machines, and I intend to substitute as an equivalent for the presenting mechanism described other mechanical feeds which will give the required motion to a sheet of tickets. My way of producing these motions by a sliding bolt and sliding rack and projections on a frame is, I believe, new.

I have before stated that the feeding mechanism, composed generally of a trough or way and two stops or gates—one shutting as the other opens, and vice versa—is not new, and I also know that a paste-hopper combined with self-acting brushes is not by itself a new device. I do, however, claim as of my own invention—

1. The combination of feeding, holding, punching, pasting, applying, and ticket-presenting apparatus, all substantially such as specified, and acting in combination, substantially as described.

2. The combination, substantially as described, of feeding with holding mechanism or apparatus, and these in combination with applying mechanism only, substantially such as specified, or in combination with punching-out and applying mechanism, substantially such as specified.

3. Punching-out and applying mechanism, substantially such as described, in combination with pasting mechanism, substantially as specified.

4. A ticket-presenting apparatus, substantially such as described, in combination with punching and applying mechanism, substantially such as specified.

5. The combination of punching with applying mechanism, each having a mode of operation substantially as set forth.

6. In combination with ticket-presenting mechanism, substantially such as described, a holding mechanism, substantially such as specified.

7. In combination, a rack, a bolt, and a frame provided with projections, all substantially such as specified, and operating as described.

8. In combination, a carriage, a rack, and a bolt, substantially such as described, in combination with a frame having projections thereon, as specified.

9. In combination, a rack, a carriage, and a bolt and two pawls provided with proper mechanism, substantially such as described, for causing them to act alternately, as specified.

10. A feeding-trough adjustable toward and

from a gate, substantially as described, in combination with a forked gate whose range of motion is adjustable, whereby the same holding mechanism may be adapted to hold and center articles of different sizes.

11. In combination with a trough or lower support for a spool or similar article, two forked gates, each having an independent downward motion, substantially as specified, whereby articles of different diameters at opposite ends may be more accurately held when acting in combination with proper mechanism for applying labels or tickets thereon.

12. In combination, ticket presenting, punching, applying, and pasting mechanism, all substantially such as described.

HEZEKIAH CONANT.

Witnesses:

J. R. ARNOLD,
JAMES O. FITCH.