(No Model.)

4 Sheets—Sheet 1.

O. C. CARPENTER.

MACHINE FOR WIRING THE CORKS IN BOTTLES.

No. 318,955. Patented June 2, 1885.

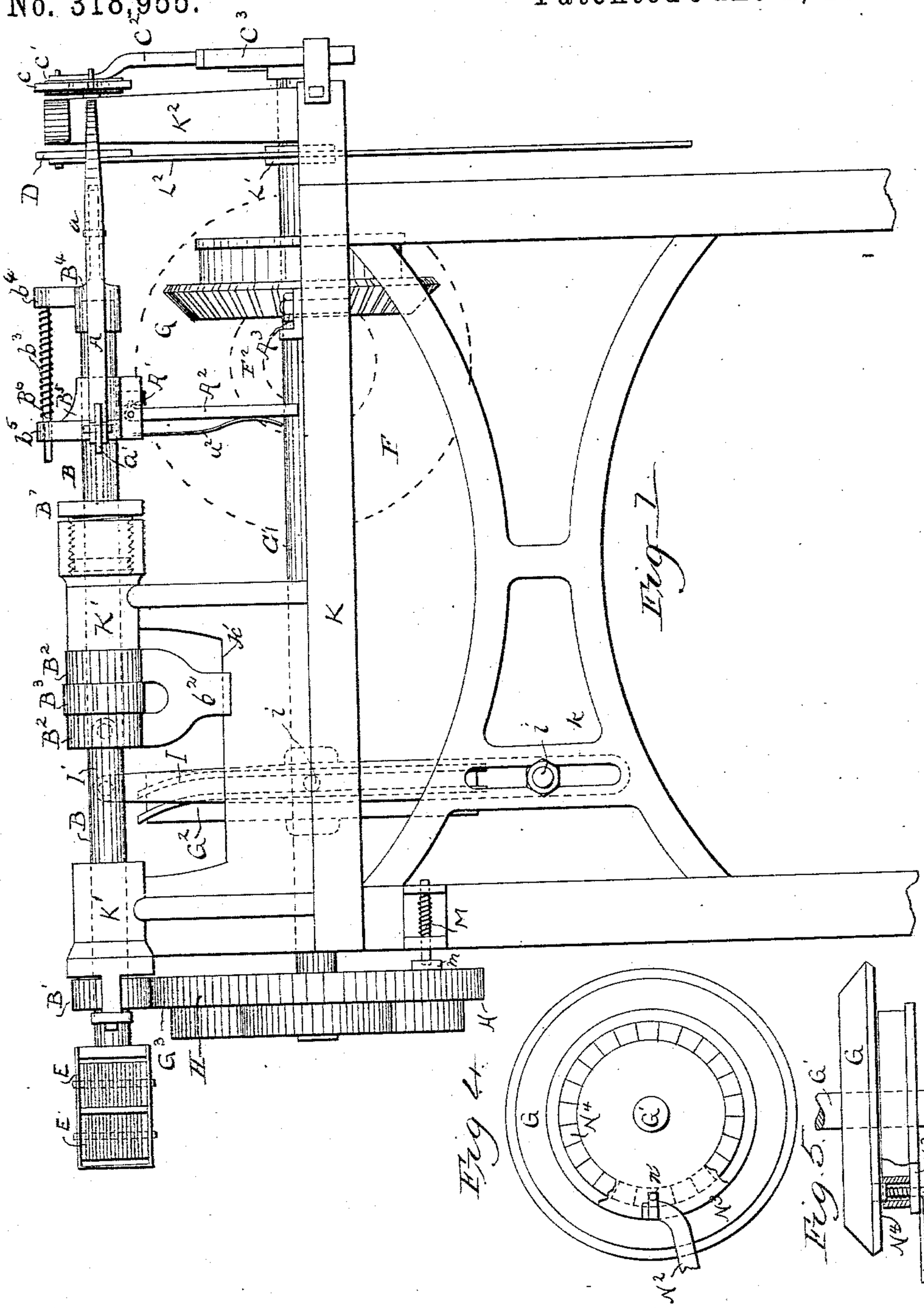

Fig. 1.

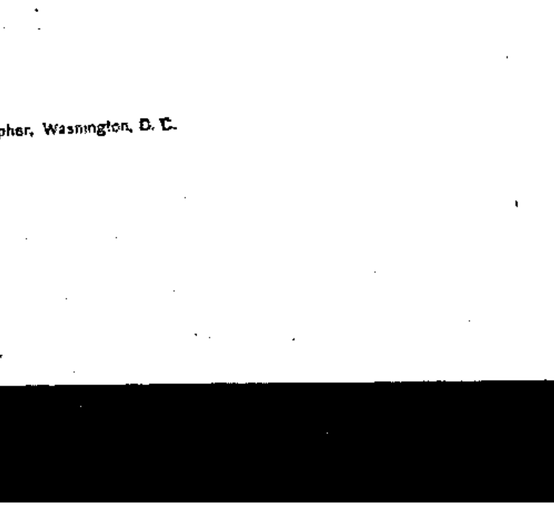

Fig. 4.

Fig. 5.

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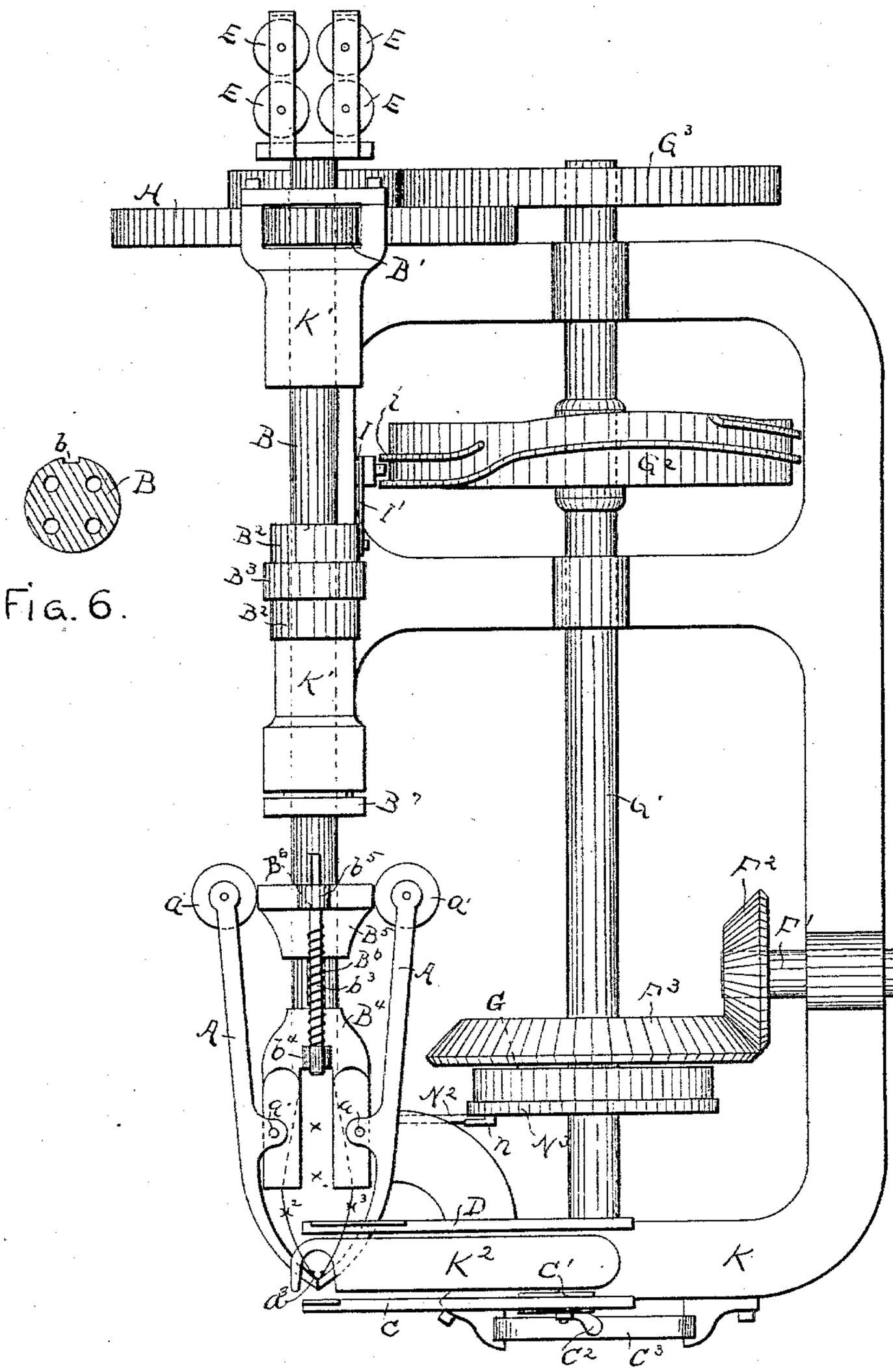

Fig. 6.

Fig. 2.

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(No Model.)

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MACHINE FOR WIRING THE CORKS IN BOTTLES.

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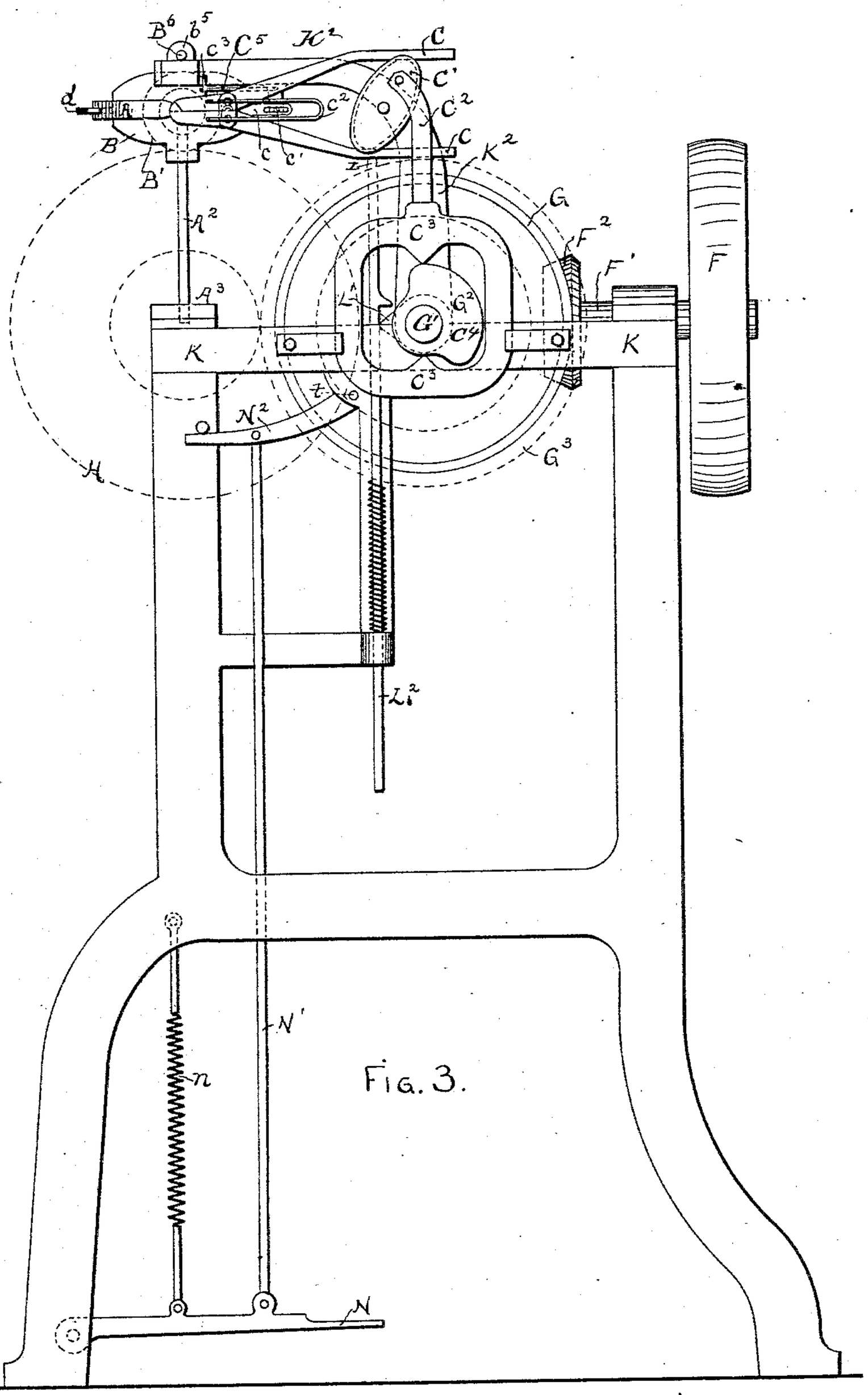

FIG. 3.

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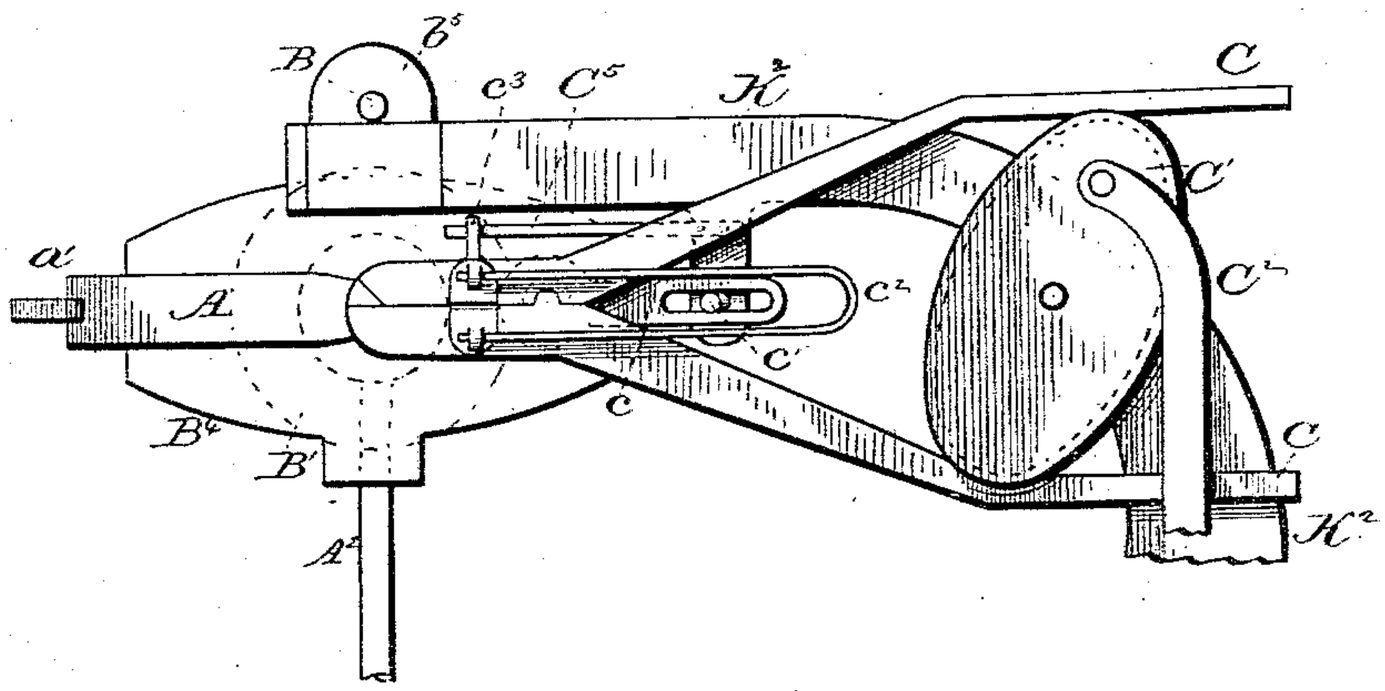
Fig. 1.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR WIRING THE CORKS IN BOTTLES.

SPECIFICATION forming part of Letters Patent No. 318,955, dated June 2, 1885.

Application filed June 13, 1884. (No model.) Patented in England June 23, 1884, No. 9,297; in France July 17, 1884, No. 163,355; in Belgium July 19, 1884, No. 65,820; in Germany November 10, 1884, No. 30,026, and in Canada February 12, 1885, No. 21,096.

To all whom it may concern:

Be it known that I, ORAMILL C. CARPENTER, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in a Machine for Wiring the Corks in Bottles; and I hereby declare the following to be a full and clear description thereof.

This invention relates to an improvement on a machine for this purpose heretofore invented by myself, and on which said invention a patent has already been allowed to me, this invention consisting of certain improvements in the details of the mechanism of the said machine, as will hereinafter more fully appear.

This invention will be readily understood by reference to the accompanying drawings, of which Figure 1 is a side elevation of the improved machine. Fig. 2 is a general plan of the same. Fig. 3 is a front end elevation. Figs. 4 and 5 are respectively a sectional front elevation and a sectional plan of the clutch-gearing for starting and stopping the operating mechanism of the machine. Fig. 6 is a transverse sectional elevation of the sliding shaft, showing the wire-tubes therein contained. Fig. 7 is an enlarged detail view of the operating-jaws, nippers, and cam for actuating the same.

In this machine, like that of my former invention, the wire used for wiring the corks in bottles is manipulated, applied to the bottles, and twisted into place by a pair of operating-jaws, A A, carried on the front end of a sliding shaft, B. There are also employed in this machine, as well as in the former, a pair of nippers, C, for holding the front end of the wire in the proper position for the bottle to take it, a pair of shears, D, for cutting off the wire after it shall have been twisted on the bottle, and spools E attached to the sliding shaft for carrying the wire which is to be wound on or applied to the bottles.

In this machine the spools E, which contain the wire ready for use, are all attached to the rear end of the sliding shaft B, and the wire is led thence through tubes *b*, contained in the shaft B, as shown in Fig. 6, to the jaws A at the front end of the machine.

It is necessary to use three wires with this machine, so as to put one wire over the top of the cork and the other two around the neck of the bottle, all united and twisted together at two opposite sides of the bottle; but I prefer to use four wires, so as to put two wires over the top of the cork and one at either side of the neck of the bottle. This arrangement of four wires is also better on account of the facility of placing the four wire-spools so as to balance on the shaft B, to which they are attached. From the said spools E the four wires leading therefrom are conducted through the tubes *b*, which extend through the entire length of the said shaft B, a separate tube for each wire, so as to prevent the possibility of the wires becoming fouled with one another. From the front end of the said tubular shaft the wires x x' x^2 x^3 are conducted through suitable guides to the front or operating ends of the jaws A.

This machine is driven by a driving-wheel, F, on a driving-shaft, F′, on which there is a cog-wheel, F^2, which gears into and drives a cog-wheel, G, on the counter-shaft G′. This counter-shaft carries also the cam-wheel G^2 and the cog-wheel G^3, the said cam-wheel being used to impart the required longitudinal movement to the sliding shaft B, as presently explained, and the wheel G^3 to rotate the said sliding shaft through the medium of the gear-wheels H and B′, the last-named wheel being a small caged pinion on the shaft B, by which the said shaft is rotated, but is permitted to slide longitudinally through, the engagement between this shaft and wheel being made by a tongue in the wheel, (not shown,) and the longitudinal groove *b′* in the said shaft. The cam G^2 throws the sliding shaft B, and with it the jaws A, forward and backward, once at each rotation of the said cam. This is accomplished by the cam engaging the sheave *i* of the lever I and moving it and the said lever laterally in conformity with the conformation of the lateral deflections of the cam-groove, which engages the said sheave *i*, the axle-pin of which is secured to the said lever. The upper end of this lever I is connected by means of a connecting-rod, I′, with the sliding collar B^2 of the shaft B, and the lower end of the said

lever is attached by the vertically-adjustable fulcrum-pin i' to the vertical ways k of the table K. By these means the fulcrum-pin i' may be adjusted vertically, (a suitable slot in the lever I permitting the adjustment,) so as to adjust the top end of the lever, and with it the sliding shaft B, to a longer or shorter throw, as required. The collar B^2, to which the connecting-rod I' is attached, allows the shaft B to rotate within it, but it is made in the form of a two-part collar, which embraces an annular collar, B^3, which is fixed to the shaft B, and as the collar B^2 is moved longitudinally by means of the lever I, as aforesaid, the relatively-fixed collar B^3 compels the shaft B to move forward and backward with it, while the shaft is still allowed to rotate within the moving bifurcated collar or clutch B^2. A guide-piece, b^2, depends from the bottom side of collar B^2 and engages on the sliding way k', so as to prevent the collar or clutch B^2 from rotating with the shaft B by reason of frictional contact therewith. The shaft B has its bearings in journal-boxes or pillow-blocks K', which are attached to the top side of the table or frame K.

In this machine, as in that of my former invention, a pair of nippers, C, hold the wire when it is first carried forward by the jaws A. The said nippers, however, and the mechanism for operating them are very much improved in the present invention, as described below. The said nippers in the present instance have a pivot-plate, c, attached to the rear side of them, and a pivot-pin, c', fixed in the front arm or standard, K^2, projects outwardly and forward from the said arm or standard and passes through a suitable aperture in the said pivot-plate c, thereby providing a fulcrum or support for the said nippers. The pivot-pin c' is slightly curved, so as to permit the front end of the nippers to swing in or out, as the operation of the said nippers requires. These nippers are habitually thrown open by means of a spring, c^2, and they are closed by means of the cam C', the connecting-rod C^2, the cam-frame C^3, and the cam C^4. The cam C^4 is placed on the front end of the shaft G', and, working within the cam-frame C^3, is, with the said frame, so constructed as to make a quick throw of the said cam-frame up or down (as the case may be) and then hold the said cam-frame up or down at the full limit of its movement during the rest of the time occupied by the rotation of its shaft G'. The cam C' is placed between the handles or arms of the nippers C, and is constructed somewhat in the form of an ellipse, and it is of such dimensions that when it is turned down flatwise between the arms of the nippers the jaws of the nippers are opened, and when it is turned up endwise the arms of the nippers are forced open, and the jaws of the said nippers are closed upon the wires, which will then have been placed between them. The connecting-rod C^2 connects the cam-frame C^3 with the cam C', so that the movements of the said cam C' and its nippers C are actuated by the driving-cam C^4, and the said jaws C are thus opened and closed once at each revolution of the shaft G', and, as above described, the said movements for opening and closing the nippers C are made quickly, and the said nippers are held open or closed, as the case may be, for the remainder of the time occupied by the shaft G' in making each and every revolution. It is necessary for the nipper-jaws C, when closed upon the wire, and while the wire is being drawn tightly around the bottle-neck, to hug tightly toward the bottle, and for this reason the said nippers are lightly mounted on the carrying-pin c' and allowed to swing laterally thereon. A spring-rod, C^5, having one of its ends fixed to the frame or arm K^2, has its other end free and extending nearly or quite parallel with the inner face of the said nippers, and engaged against a pin, c^3, rising from and attached to the said nippers, the whole arranged so that the said spring-rod C^5 habitually throws the said nipper-jaws back toward the bottle, but permits them to move outwardly with a yielding pressure of the jaws.

The jaws A, which carry the wires to and twist them around the bottle-neck, are pivoted at a to the head-piece B^4 of the shaft B. The rear ends of these jaw-pieces have sheaves a' journaled in them in such a manner as to allow the peripheries of the said sheaves to project inwardly from the said jaw-pieces. The sliding shaft B, besides having on its forward end the bifurcated head-piece B^4, to which the jaws A are pivoted, has a sliding head, B^5, with sloping or wedge-shaped sides, against which sloping sides the sheaves a' press as the shaft is thrown forward to the full limit of its movement, and the said sheaves rolling up on these inclines or sloping sides throw the front ends of the said jaws together upon the wires, which are placed between them. The said sliding head B^5 is placed on the shaft B, just behind the fixed head-piece B^4, but far enough removed from it to allow the head-piece B^5 to slide forward and backward on the said shaft one or two inches, (more or less.) A rod, B^6, having a coiled spring, b^3, around it, is supported in the lugs b^4 and b^5, parallel with and near the shaft B, the said lugs b^4 and b^5 being respectively secured to the fixed head B^4 and the sliding head B^5, to one of which said lugs the rod B^6 is secured, and through the other one the said rod is allowed to slide. The spring b^3 is arranged so as to habitually throw the head-pieces B^4 and B^5 apart, but so as to allow the head-piece B^5 to slide toward the fixed head-piece as required for the operation of the machine. A spring-catch, A', is pivoted in a projection at the bottom side of the sliding head-piece B^5, and arranged to catch in a suitable serration or notch in the shaft B when the sliding head is thrown forward on the said shaft to the limit of its movement, and this latching of the sliding head upon the shaft B, when the said sliding head is thrown

forward between the sheaves a', so as to close the jaws, holds the said jaws firmly closed upon the wires until the catch A′ is released and the spring b^3 is allowed to throw the sliding head B^5 back from the fixed head-piece. A downwardly-projecting lever, A^2, attached to the said latch A′, has a spring, a^2, which habitually throws the latch A′ into engagement with its notch in the shaft B. An adjustable stop, A^3, is attached to the table or frame K, so as to engage the lower end of the lever A^2 and release its latch A′ just before the attainment of the full forward stroke of the sliding shaft B. Just about this moment in the movement of the machine the bottle to be wired is placed from below up between the jaws A, and the wires are drawn over and around the bottle-top, and the next instant the lever A^2 strikes its stop A^3, and then the sloping head-piece B^5 is released, and the spring b^3 throws it back and the jaws A are opened and allowed to draw back around the neck of the bottle. Then, as the shaft is next thrown backward, the adjustable stop B^7 is engaged by the rearwardly-moving head-piece B^5, and stops it while the shaft B is still moving rearwardly, and the shaft is continued in its rearward movement until the latch A′ is engaged in the notch prepared for it in the shaft B, and thus the jaws A are closed and held closed until the stop A^3 releases them at the next forward movement. While the jaws are thus closed, the shaft B and its jaws A are rotated, so as to properly twist the wire on the bottle. The two side wires—*i. e.*, those which pass around the sides of the bottle-neck—are led through guides a^3 on the inner sides of the jaws A and near their forward ends, thus placing them so the bottle-neck can readily be thrust up between them. After the wires are fully twisted on the bottle they are cut off by means of a pair of shears, D, attached to the inner face of arm K^2, the said shears being operated by a cam, L′, on the shaft G′ and the connecting-rod L^2, in a manner very similar to that employed in my former machine.

This machine is started and stopped by means of a clutch-gearing, and it is necessary to stop it with the jaws A in a horizontal position, so as to present them when they are moved forward in the proper position for a bottle to be thrust up between them. To do this properly it is required to stop the rotation of the shaft B instantly, and to prevent what would be a recoil shock I place a spring-catch, M, on the frame of the machine and arrange it to engage with a stop, *m*, on the wheel H, so as to arrest any recoil of the machine as soon as the said stop passes the said catch, the moment of stopping the rotation of the machine being arranged to occur just at the moment the stop *m* shall have passed the catch M.

The mechanism of this machine is started and stopped by means of a clutch-gearing on the shaft G′, which said clutch gearing or mechanism is operated by the treadle N at the front end of the machine. This treadle is pivoted to one of the front legs of the machine, and in a convenient position for the operator to press it down with his foot as he sits or stands in front of the machine in the position for applying the bottles to the machine. A spring, *n*, habitually draws the treadle up, and a rod, N′, connects the treadle-bar with the clutch-lever N^2, which is pivoted at *t* to the frame of the machine at a convenient point to engage with the clutch-spring pin *n′* of the clutch-wheel N^3. The top end of the said lever N^2, which engages with the clutch-spring, is beveled, so as to allow the projecting head of pin *n′* to slide up on it and draw the said clutch-pin out of contact with the clutch-gearing or serrations N^4, which are formed in the face of the cog-wheel G. When this is done, the wheel G revolves loosely on the shaft G′, and the operative parts of the machine remain idle; but as soon as the treadle N is pressed down the beveled end of the lever N^2 is drawn out from behind the catch-pin *m′*, and it instantly springs into the serrations of the clutch N^4, and the wheel G is thus coupled to the clutch-head N^3, which is secured to the shaft G′, and the operative mechanism of the machine is thus set in operation, and continues so until the treadle N is released, when the beveled end of the lever N^2 again slides behind the head of the clutch-pin *n′*, and thereby disengages the coupling between N^3 and N^4.

Having described my invention, I claim—

1. In a machine for wiring corks in bottles, a rotary and reciprocatory shaft provided with four longitudinal tubes or holes through its entire length for conducting wires, and means for rotating and means for reciprocating said shaft, in combination with jaws for grasping the wires, mechanism for opening and closing the jaws, and means for rotating the jaws, substantially as described.

2. The sliding head-piece B^5, provided with a locking or latching piece, A′, arranged to engage in a suitable notch or serration in the shaft B to hold the said sliding head secured in place with its jaws A closed, the said latch-piece being provided with a spring-lever, A^2, which permits the latch to engage with its notch in the shaft at the end of its rearward stroke, and to engage with a fixed stop, A^3, at the front end of its stroke, so as to release the said latch and allow the jaws to open.

3. The combination of a rotary sliding shaft, B, a head, B^4, fixed thereto, and provided with a lug or lugs, b^4, wire-grasping jaws A, pivoted to said fixed head, and provided with arms extending back of said fixed head, a sliding tapered head, B^5, on said shaft, provided with a lug or lugs, b^5, a rod or rods, B^6, connecting said heads, a spring or springs, b^3, on said rods for throwing the sliding head out of contact with said arms, and means for moving said sliding head between said arms for closing the jaws, substantially as described.

4. The nippers C, operated by the elliptical

cam C′, the connecting-rod C^2, the cam C^3, and the operating-cam C^4 on the shaft G′, which close the said nippers quickly and hold them closed for a considerable part of the time of each revolution of the shaft G′, substantially as described.

5. The spring C^5, arranged to habitually throw the nippers C inwardly, but with such a yielding pressure as to allow them to move slightly from the bottle during the wiring operation.

6. The combination of a rotary sliding shaft, wire-grasping jaws pivoted thereto, a sliding tapered head on said shaft in rear of the pivot-points of the jaws, means for sliding said head, a catch for holding said head, and an adjustable stop for releasing said catch, substantially as described.

7. The combination of the bottle-wiring mechanism, the motion-transmitting mechanism, the clutch, and a recoil-stop consisting of a spring-catch, M, and a stop on the wheel H of the motion-transmitting mechanism, substantially as described.

8. In a machine for wiring bottles, the combination of a rotary reciprocating shaft, pivoted wire-grasping jaws connected thereto, and a sliding tapered head on said shaft for closing said jaws, substantially as described.

9. In a machine for wiring bottles, the combination of a rotary reciprocating shaft, pivoted wire-grasping jaws connected thereto, a sliding tapered head on said shaft for closing said jaws, and a spring to open said jaws, substantially as described.

10. The reciprocating shaft provided with wire-conducting tubes or holes, the clamping-jaws and means for rotating them, and the sloping sliding head, in combination with the nippers C and their actuating mechanism.

In testimony of which said invention I hereunto set my hand this 15th day of March, 1884.

ORAMILL C. CARPENTER.

Witnesses:
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CHAS. A. FULTON.