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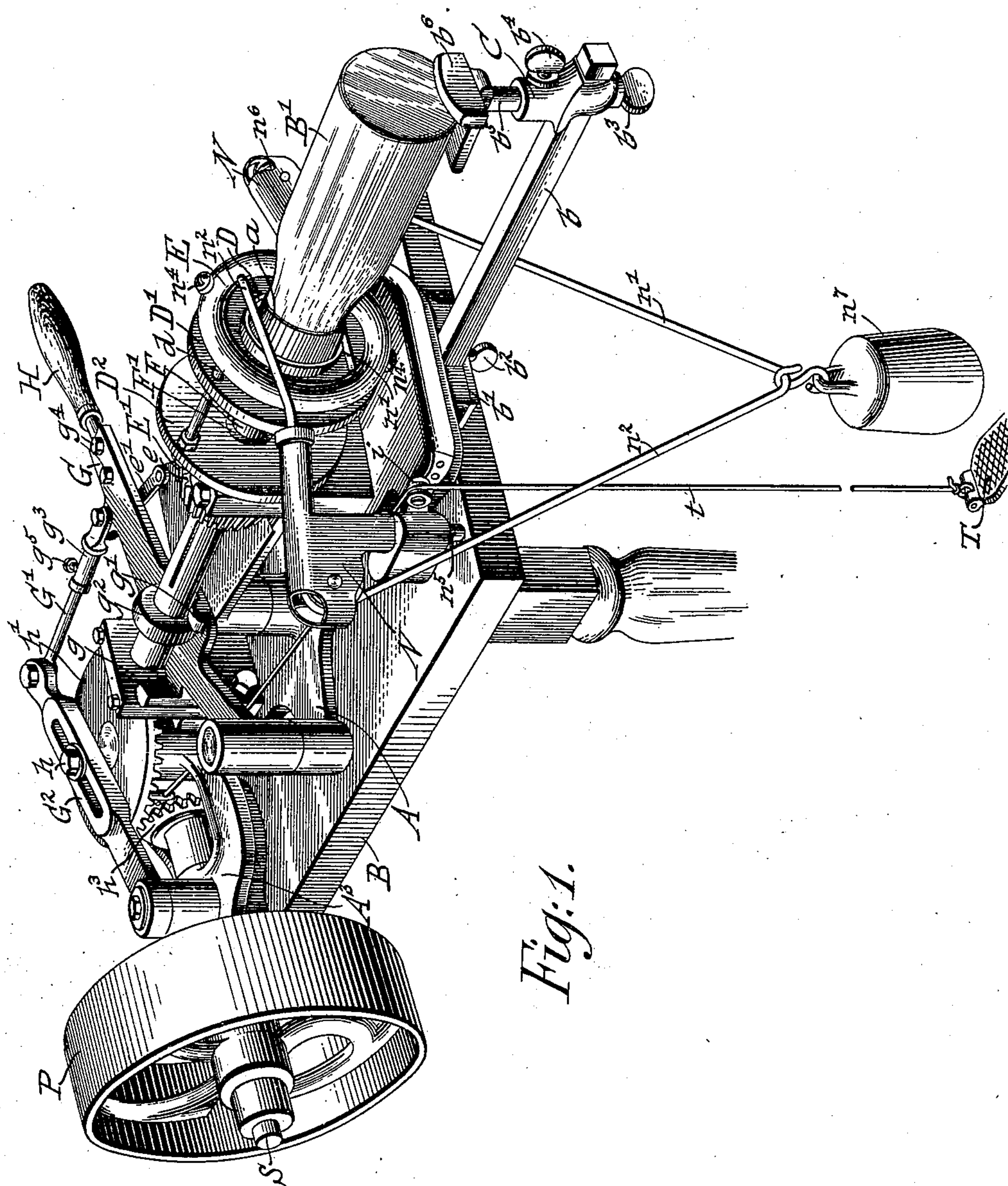
G. NORTON.

MACHINE FOR CAPPING BOTTLES.

(Application filed Dec. 4, 1901.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES :

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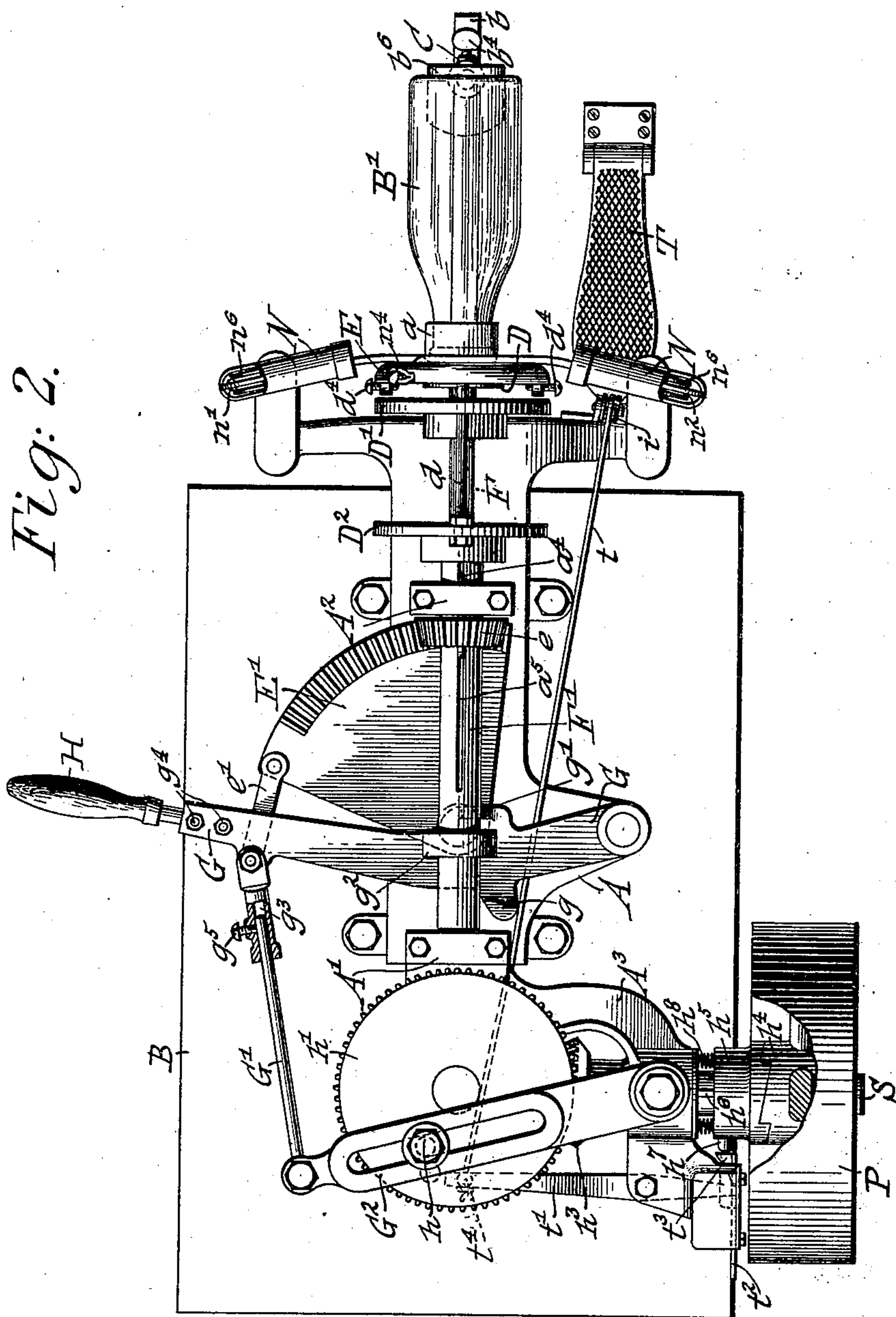
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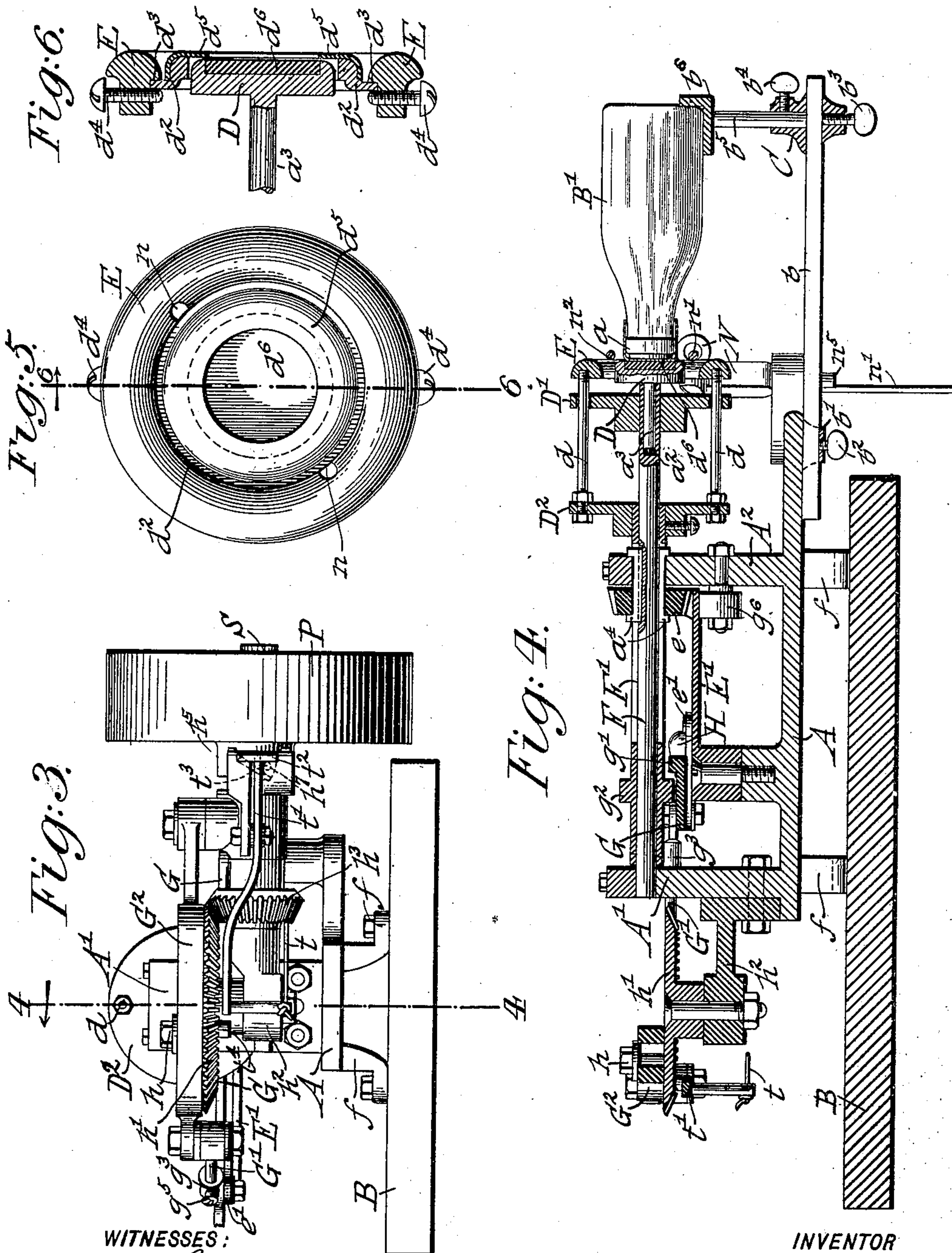
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UNITED STATES PATENT OFFICE.

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MACHINE FOR CAPPING BOTTLES.

SPECIFICATION forming part of Letters Patent No. 710,296, dated September 30, 1902.

Application filed December 4, 1901. Serial No. 84,654. (No model.)

To all whom it may concern:

Be it known that I, GERRIT NORTON, a citizen of the United States, residing in New York, borough of Manhattan, and State of New York, have invented certain new and useful Improvements in Machines for Capping Bottles, of which the following is a specification.

This invention relates to improvements in machines for capping bottles, jars, &c., used for olive-oil, catchup, liquors, pickles, olives, and similar articles, the machine being capable of being run either by power or by hand, as desired; and the invention consists of a bottle-capping machine which comprises a rotary cord-ring, weighted cords applied to said cord-ring, swiveled cord-guides, a disk against which the bottle to be capped is held, and means for rotating the cord-ring and simultaneously moving the same forward over the neck of the bottle, so that the capping-cords place the cap snugly on the neck of the bottle; and the invention consists, further, in certain details of construction and combinations of parts, which will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of my improved machine for capping bottles. Fig. 2 is a plan view with parts broken away. Fig. 3 is a rear elevation of the machine. Fig. 4 is a vertical central section longitudinally of the machine; and Figs. 5 and 6 are respectively a detail front view and a vertical transverse section on line 6 6, Fig. 5, of a portion of the machine.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A indicates the frame of my improved machine, which is supported by feet *f* or otherwise on a suitable table B. An arm *b* extends from one end of the frame A, said arm being supported by any suitable means, as by a keeper *b'* of the frame, and secured in position where set by means of a clamping-screw *b²* or other suitable device. Upon the arm is located a bottle-rest comprising a head C, adapted to slide on the arm and provided with clamping-screws *b³* *b⁴*, adapted to engage, respectively, the arm *b* and the shank *b⁵* of an adjustable

bottle-support *b⁶*, said shank entering a socket of the head C. The arm *b* and bottle-rest may be removed in case the machine is to be worked without the same, the bottle being held by hand during the capping operation.

From the base of the frame A rise at suitable distance apart two uprights or standards *A'* *A²*, which are provided with bearings for a shaft F, the front end of which is provided with a socket *a²*, in which fits loosely the shank *a³* of a disk D, having a leather or other cushion *d⁶*, against which the capped head of the bottle B' rests. Concentric with the disk D is located a cord-ring E, which is secured to the ends of supporting-rods *d*, each rod being secured at its opposite end to a supporting-disk D², attached to a tubular shaft F', located on the shaft F, said tubular shaft extending from the rear standard through the front standard, and the shaft F carrying a guide-disk D', provided with openings through which the rods *d* freely pass. The tubular shaft slides freely longitudinally on the shaft F and is secured thereto, so as to rotate therewith, by means of a key or keys *a⁴*, which pass through slots *a⁵* of the shaft F' and into recesses of the shaft F. The keys are double-headed, and the heads are located at opposite sides of the standard *A²* and a pinion *e*, more fully referred to hereinafter thereby preventing longitudinal movement of shaft F.

To the base-frame A, as shown clearly in Figs. 1 and 2, is pivoted a lever G, provided at opposite sides with raised lugs *g* *g'*, adapted to engage with a collar *g²* on the tubular shaft F', so as to thereby move the tubular shaft in forward or backward direction, according as the one lug or the other on the lever G engages the collar *g²*. To the outer end of the lever G is pivoted a connecting-rod G', which is provided with means, such as a pivot-socket *g³*, for adjusting its length. The opposite end is connected with a slotted lever-arm G², pivoted at its opposite end to a bracket-arm A³ of the base-frame A, which is provided with a bearing for the driving-shaft S. The slotted portion of the lever-arm G² is engaged by a wrist-pin *h*, projecting from a bevel-wheel *h'*, rotatably mounted on a bracket *h²* of the frame A. Said bevel-wheel meshes with a

pinion h^3 on the driving-shaft S. Upon the shaft S is loosely mounted a pulley P, having a toothed hub h^4 , forming one member of a clutch device by which operation of the machine is controlled. The other member of the clutch is a short sleeve h^5 , ratchet-toothed in the opposite direction and splined by spline h^6 to shaft S. From sleeve h^5 extends radially a pin h^7 .

Rotary motion is imparted to the tubular shaft F' by toothed segment E', which meshes with a bevel-pinion e , splined by the keys a^4 to the shaft F'. A roller g^6 , suitably mounted on the standard A² or other support, serves to retain the segment and pinion reliably in mesh. The segment E' is connected to the outer end of the lever G by a pivot-link e' .

To a suitable treadle T is connected a cord t , which passes over a guide-pulley i and is secured to a clutch-operating lever t' , pivoted to the frame A, the other end of which lever engages a slide t^2 , guided in suitable slots of the frame and composed of a plate twisted out of a vertical plane for a portion of its length. The inclined portion t^3 is so located as to be when in advanced position in the path of the pin h^7 .

Different sizes of disks D are used for different sizes of bottles. The cord-ring E is of sufficient size to encircle the different sizes of disks and is composed of a ring of metal or other suitable material, preferably convex at its front face, as shown in Figs. 4 and 6. The cord-ring is provided at diametrically opposite points with two holes n , through which pass the capping-cords $n^1 n^2$, which are preferably made of leather. The cords are secured to the ring by placing the slitted end portions over fastening-screws n^4 . The cords pass through pivoted cord-guides N, which are swiveled upon studs n^5 at the front end of the frame A or in any other suitable manner, said cord-guides being provided with cord-pulleys n^6 for guiding the capping-cords. The capping-cords preferably constitute one continuous cord, as shown in Fig. 1, and to the same is freely applied a weight n^7 , which keeps the same taut. The ends of the capping-cords extend across the face of the cord-ring, as shown clearly in Fig. 1, and lap around the cap a when the head of the bottle is placed against the loose disk D, so that by the simultaneous forward and rotary motion of the cord-ring the capping-cords lap around the cap and apply the same tightly to the neck of the bottle to be capped. As soon as the capping operation is performed the backward motion and opposite rotary motion of the ring commences, so that the cord-ring and capping-cords are returned into their former position, the capped bottle being then removed and the next one placed in position against the loose disk, so as to be capped by the capping-cords in the same manner as before described. When bottles with large necks, such as pickle-jars and the like, are to be capped, a larger supporting-disk is employed. In the

case of jars it is preferable to support them during the capping operation on the bottle-rest, the lower end of the bottle being placed thereon, as shown in Fig. 1. With the cord-ring is preferably used an interior ring d^2 , (shown in Fig. 6,) the cord-ring being in this case provided with means, such as the shoulder d^3 and screws d^4 , for retaining said ring d^2 in place, and said ring d^2 supporting a guard-ring d^5 , secured thereto frictionally or otherwise and made, preferably, of sheet metal.

In some cases it may be desirable to operate the capping-machine by hand, especially when power is not available. In this case the lever G is provided with a socket at its outer end, into which a handle H is inserted, the shank of the handle being retained on the lever G by suitable fastening-screws g^4 , as shown in Figs. 1 and 2. In this case the connecting-rod G' may be detached from the lever by loosening the screw g^5 of the pivot-socket g^3 and the machine operated by moving the lever forward and backward with one hand while the other hand holds the bottle in position on the disk D, so that the capping-cords can perform the capping operation. The leather capping-cords are kept soft by a suitable lubricant, so as to remain soft and smooth prevent tearing of the cap by friction with and the same. When the capping-cords are worn down at portions, they may be pulled through or detached from the cord-ring, the worn parts cut off, new slots cut in the ends, and the same again attached to the screws n^4 .

The operation of applying the caps is performed through the oscillation of the lever G, which is effected either by power or by hand and by which longitudinal reciprocating and rotary motion is imparted to the cord-ring, so that the capping-cords are worked around the cap placed on the neck of the bottle and pushed forward at the same time, whereby the tin-foil cap is smoothed down tightly without marring or chafing the same. When the machine is not in operation, the treadle T is in raised position and the inclined portion t^3 of the slide t^2 located beneath and in engagement with the pin h^7 , the clutch-member h^5 being thereby retained out of mesh with the member h^4 . Upon depressing the treadle, lever t' is drawn into position shown in Fig. 2, thereby drawing the slide out of engagement with pin h^7 , which permits sleeve h^5 to move under the action of its springs h^8 into mesh with the pulley-hub h^4 . Pulley P being in motion the machine is operated. Bevel-wheel h' engages by a pin t^4 after nearly a full rotation the lever t' and throws the same outwardly, and thereby the slide t^2 inwardly into the path of the pin h^7 , which strikes the incline t^3 , thereby disengaging the clutch and permitting the machine to stop and raising the treadle. The friction of pin h^7 with the incline t^3 is such, owing to the considerable angle of inclination, that the pin remains located against the portion

t^3 . Sufficient rotation of the wheel h' takes place before stoppage of the machine for pin t^4 to pass beyond the end of lever t' . For starting the machine again the treadle is again depressed and the machine makes again a complete operation and comes to rest, the operation being repeated at each depression of the treadle.

The advantages of my improved bottle-capping machine are that it will cap any bottle, from the smallest up to the largest bottle, jar, or tumbler; second, that the bottle is firmly held by the cords during the capping operation, but released as soon as the capping operation is complete; third, that it caps the bottles as quickly as the same can be handled; fourth, that it can be worked without requiring skilled employees, as there is no danger to the hands of the operator.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a bottle-capping machine, a cord-ring, an interior ring secured within the same, means for attaching capping-cords at diametrically opposite points to said cord-ring, and a guard-ring supported on the interior ring, substantially as set forth.

2. In a machine for capping bottles, the combination, with a winding device, of a rotatable shaft, a longitudinally-slotted tubular shaft mounted to slide longitudinally on said rotatable shaft and to rotate therewith, a gear-wheel splined adjacent one end of said tubular shaft, a collar provided on the opposite end thereof, a toothed segment meshing with said gear-wheel, and reciprocating means for engaging said collar and actuating said toothed segment, substantially as set forth.

3. In a machine for capping bottles, the combination of a rotatable shaft, a tubular shaft slidably mounted thereon and rotatable therewith, a collar provided on said tubular shaft, a lever provided with lugs for engaging said collar, a toothed segment connected with said lever for rotating said shafts, and means for reciprocating said lever and said toothed segment, substantially as set forth.

4. In a machine for capping bottles, the combination of a rotatable shaft, a tubular shaft slidably mounted thereon, said shafts being adapted to rotate together, a collar provided on said tubular shaft, a lever for engaging said collar, a toothed segment connected with said

lever for rotating said shafts, means for reciprocating said lever and toothed segment, and means for automatically stopping said reciprocating means, substantially as set forth.

5. In a machine for capping bottles, the combination of a rotatable shaft, a tubular shaft slidably keyed therewith, a collar provided on said tubular shaft, a reciprocating lever for engaging said collar, a toothed segment connected with said lever for rotating said shafts, a power-transmitting shaft, a bevel-gear provided at one end thereof, a suitably-supported toothed disk meshing therewith, a slotted lever having its slotted end pinned to said toothed disk, and an adjustable means connecting said reciprocating lever with said slotted lever, substantially as set forth.

6. In a machine for capping bottles, the combination of a rotatable shaft, a tubular shaft, a reciprocating lever for imparting longitudinal motion to said tubular shaft, a toothed segment connected with said lever for rotating said shafts, a power-transmitting shaft, a bevel-gear provided at one end thereof, a suitably-supported toothed disk meshing therewith, a slotted lever having its slotted end pinned to said toothed disk, a rod adjustably connecting said reciprocating lever and said slotted lever, a pulley-wheel loosely mounted on said power-transmitting shaft, and a spring-actuated clutch on said power-shaft for engaging said pulley-wheel, substantially as set forth.

7. In a power-transmitting mechanism for a bottle-capping machine, the combination of a power-transmitting shaft, a bevel-gear at one end thereof, a toothed disk meshing therewith, a pulley loosely mounted on said power-transmitting shaft, a spring-actuated clutch for engaging said pulley-wheel, a pin projecting from said clutch, a slide-plate having an inclined surface for engaging said pin, a lever for actuating said plate, means on said toothed disk for actuating said lever, and a treadle-actuating device connected with said lever, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

GERRIT NORTON.

Witnesses:

PAUL GOEPEL,
JOSEPH H. NILES.