

No. 859,537.

PATENTED JULY 9, 1907.

M. H. BALLARD.
PAPER CUTTING DEVICE FOR WRAPPING MACHINES.

APPLICATION FILED DEC. 4, 1905.

2 SHEETS—SHEET 1.

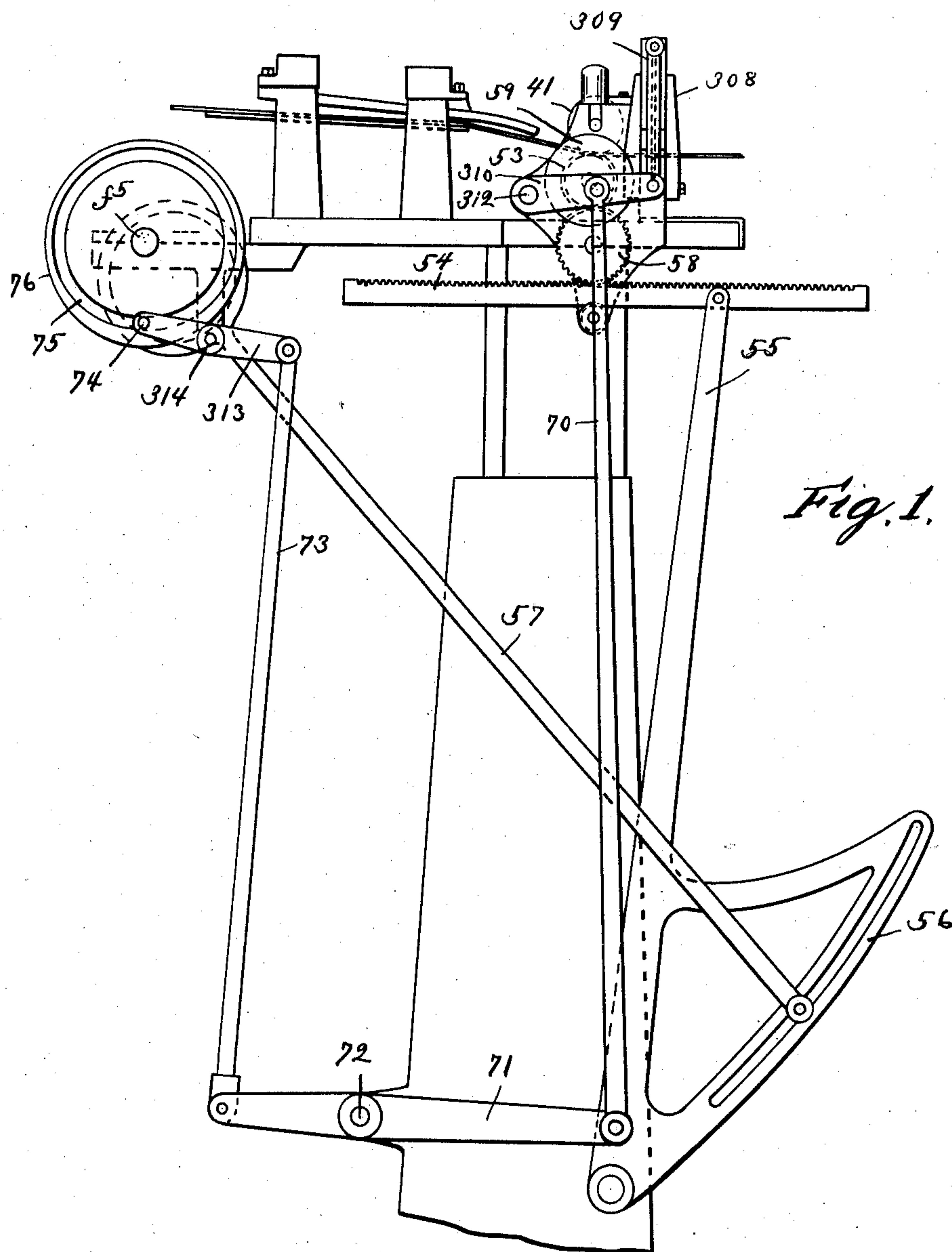


Fig. 1.

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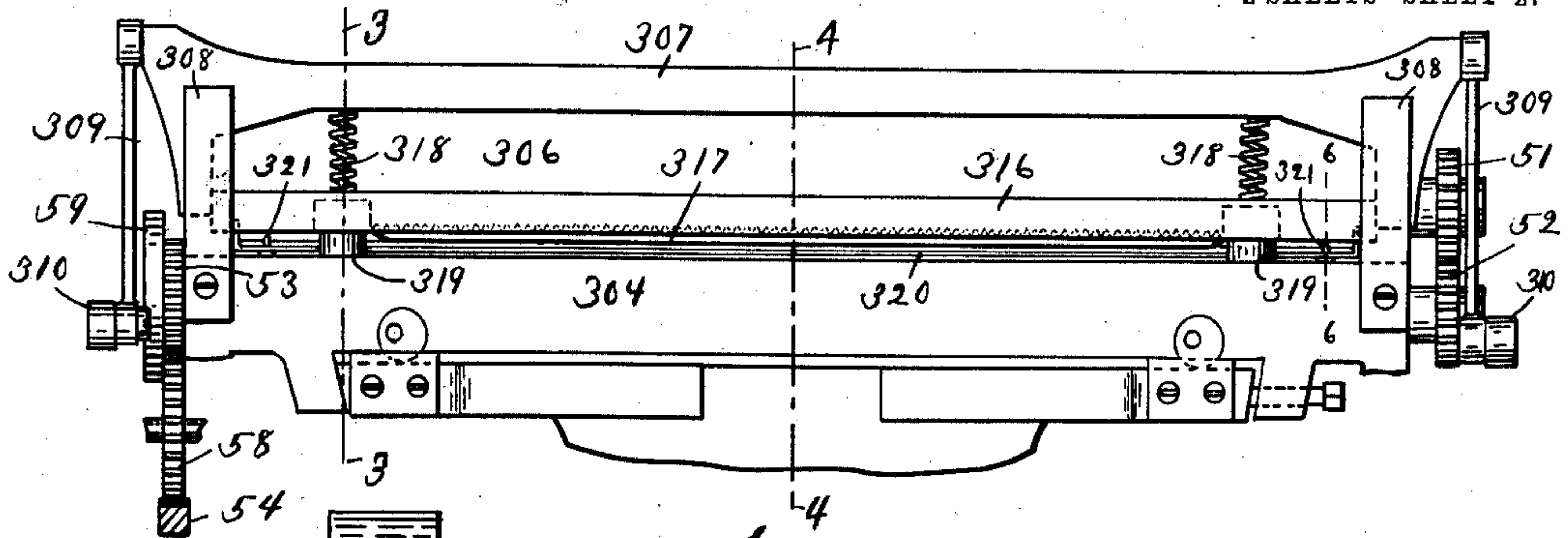


Fig. 2.

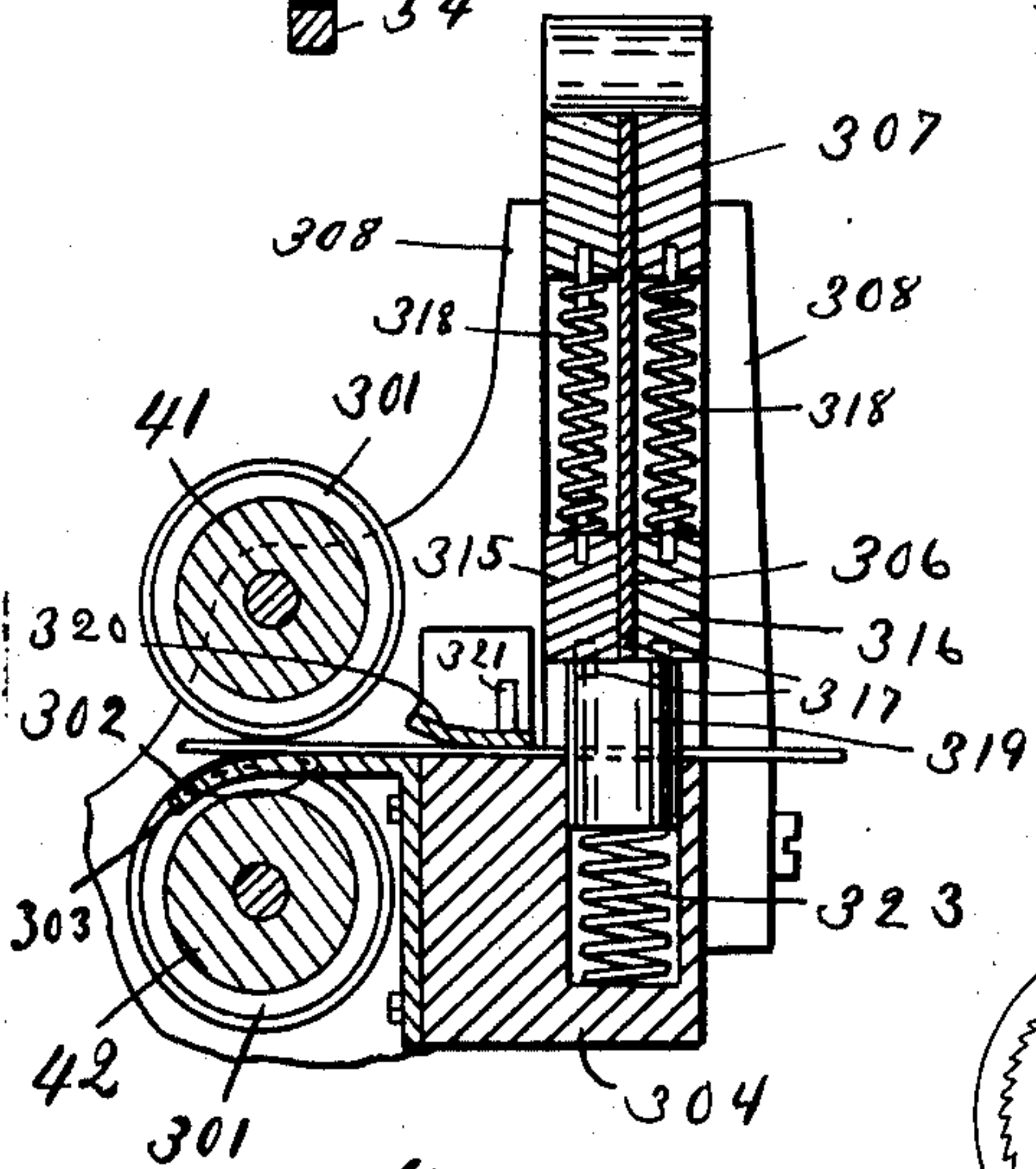


Fig. 3.

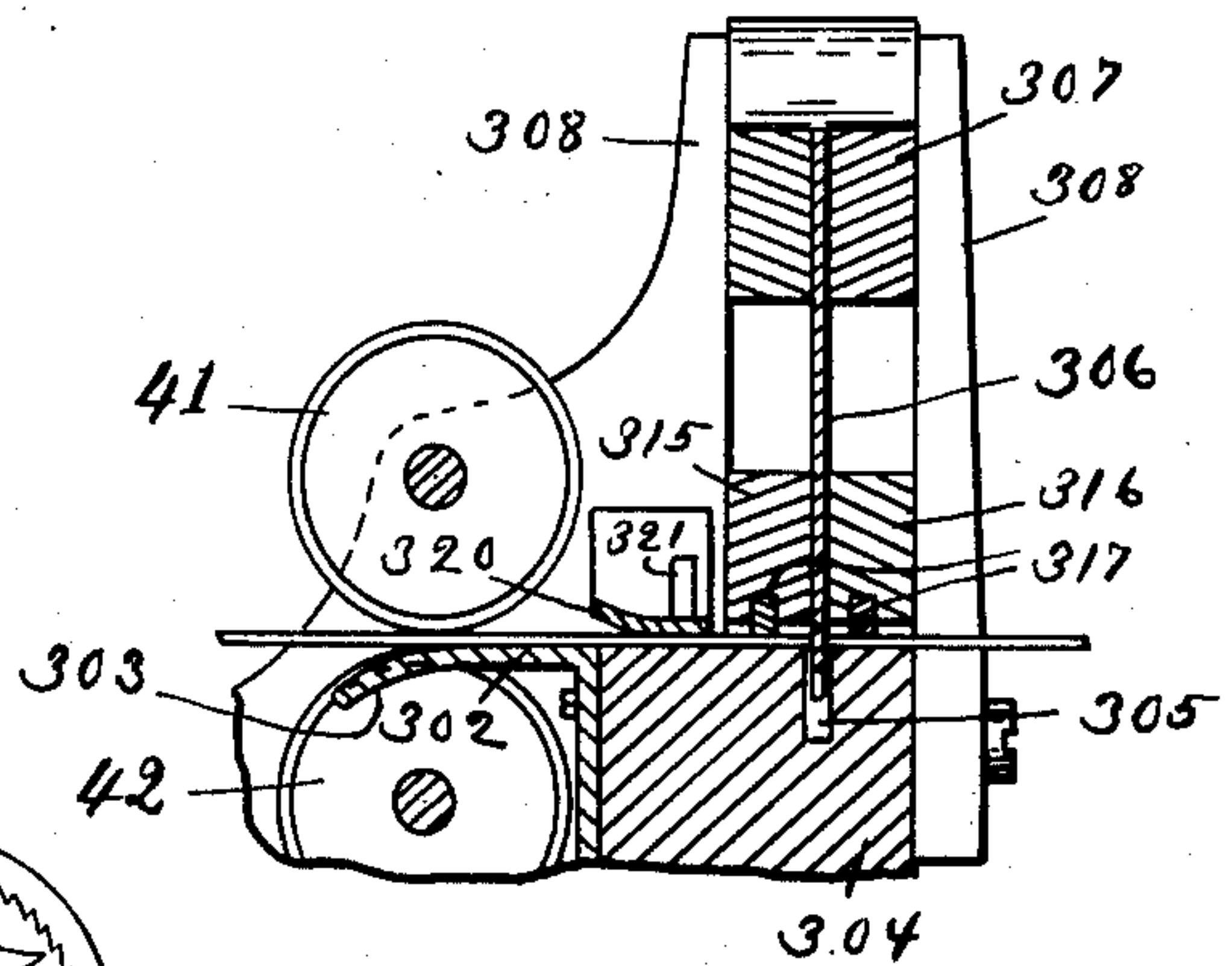


Fig. 4.

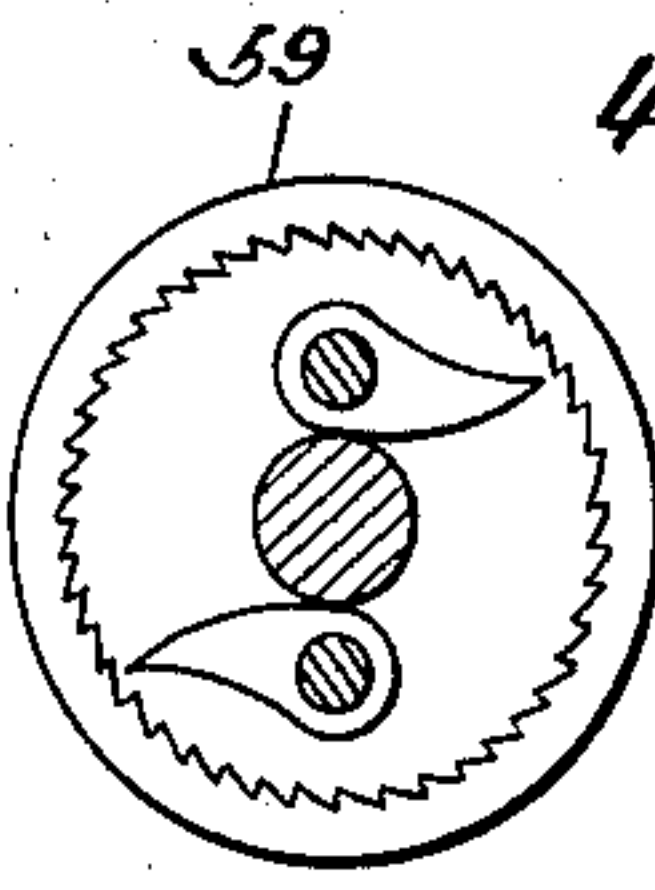


Fig. 7.

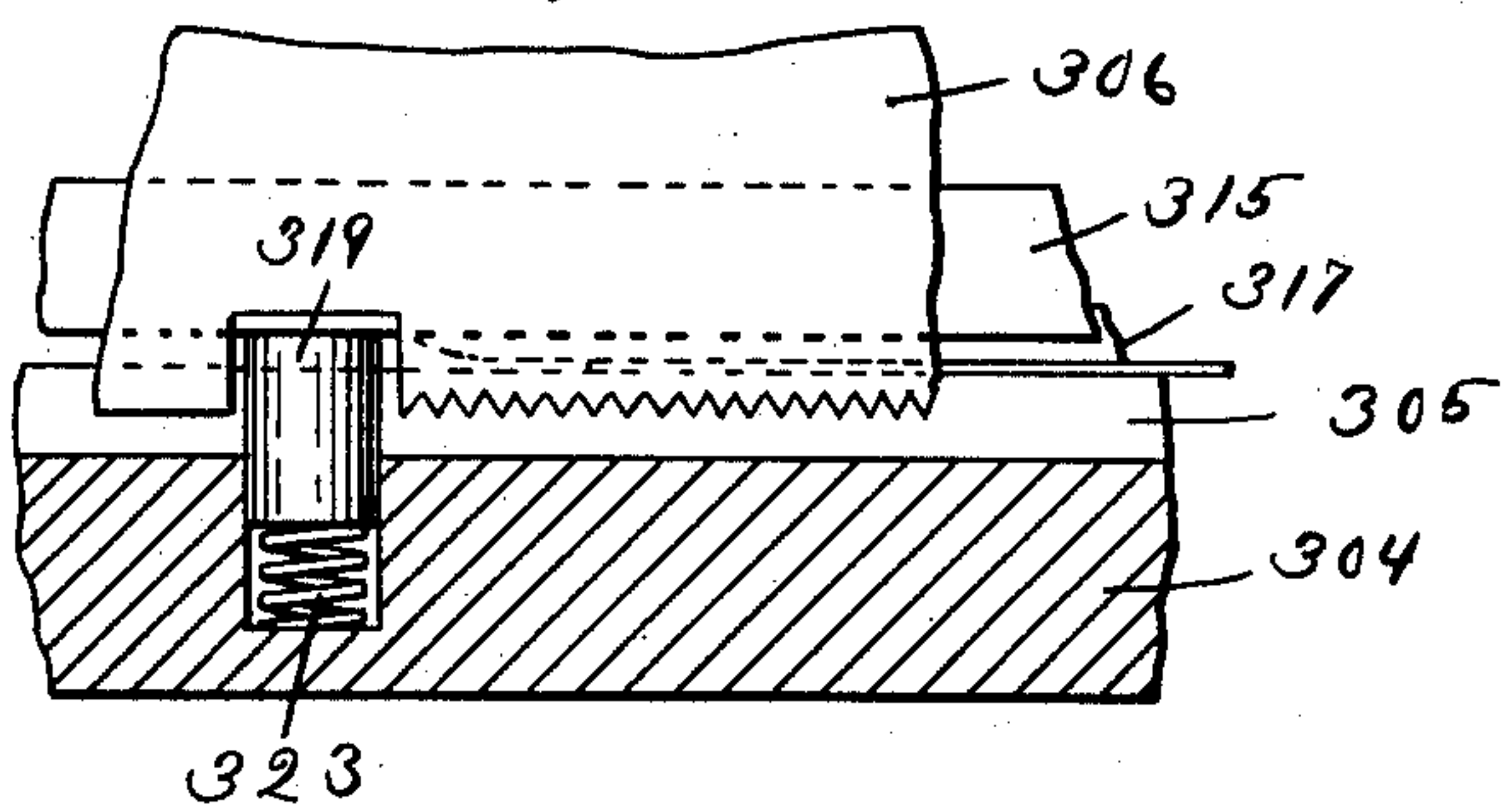


Fig. 5.

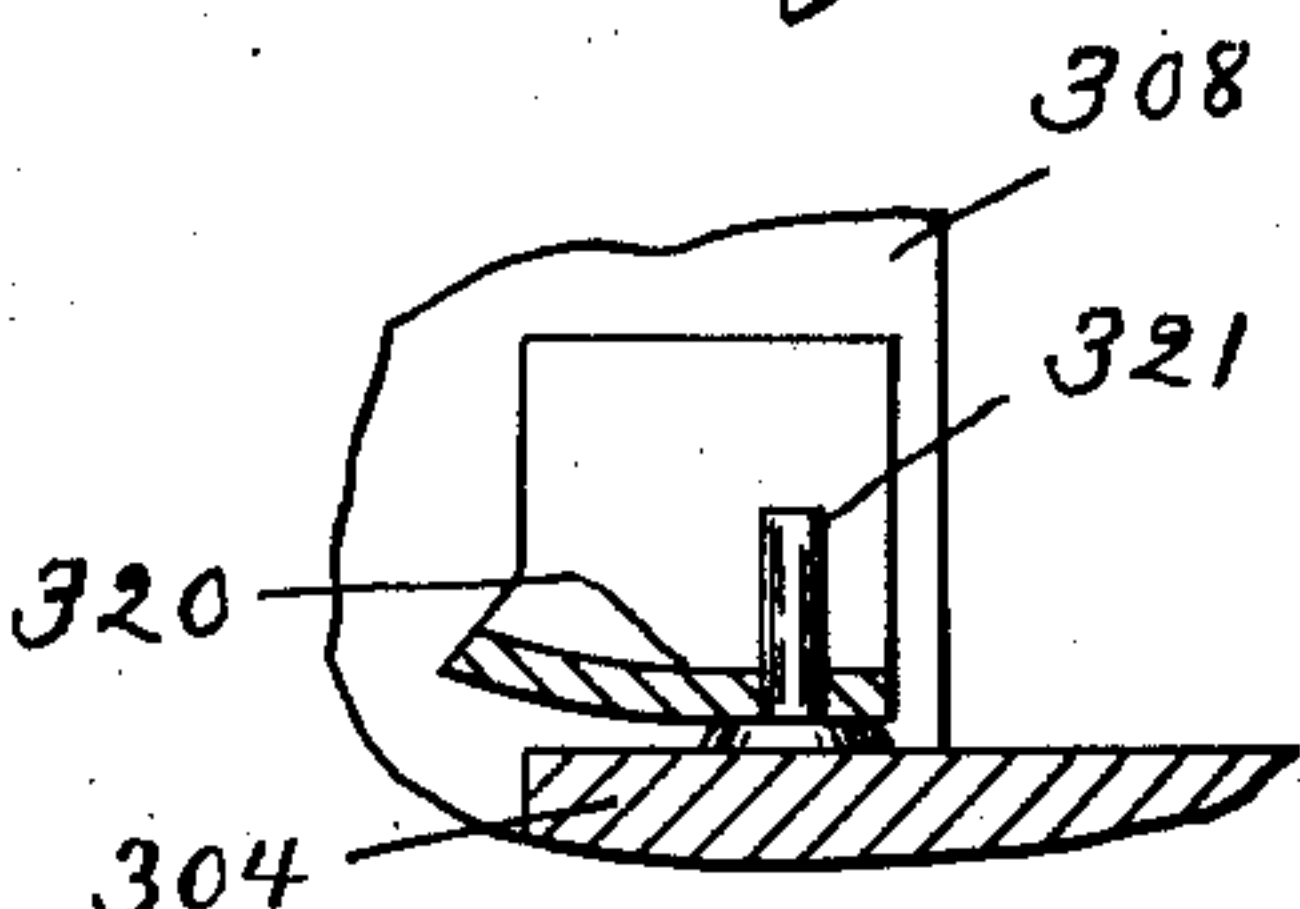


Fig. 6.

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UNITED STATES PATENT OFFICE.

MILTON H. BALLARD, OF LYNN, MASSACHUSETTS, ASSIGNOR TO TRIPP FRUIT WRAPPING MACHINE COMPANY, OF LYNN, MASSACHUSETTS, A CORPORATION OF MAINE.

PAPER-CUTTING DEVICE FOR WRAPPING-MACHINES.

No. 859,537.

Specification of Letters Patent.

Patented July 9, 1907.

Original application filed December 23, 1904, Serial No. 238,074. Divided and this application filed December 4, 1905.
Serial No. 290,110.

To all whom it may concern:

Be it known that I, MILTON H. BALLARD, of Lynn, county of Essex, State of Massachusetts, have invented an Improvement in Paper-Cutting Devices for Wrapping-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This application is a division of my application #238,074, filed December 23, 1904.

This invention has for its object to provide a wrapping machine, such for instance, as shown in Letters Patent #472,202, dated April 5, 1892, with an improved form or construction of paper cutting-device for cutting off the end portion of a strip of paper to form wrappers, to the end that the same may be sharpened and adjusted by an ordinary workman, thereby obviating the services of an experienced mechanic; also to provide means for holding the paper firmly, at both sides of the knife, while the knife operates to sever it, also to provide means for simultaneously engaging the paper at both sides of the knife, and for holding it while the knife operates; also to construct and arrange the paper-engaging and holding devices, in such manner as to hold the severed ends of the paper while the knife is moving out of engagement with it.

Figure 1 shows in side elevation a sufficient portion of a wrapping machine to illustrate my invention, provided with my improved paper cutting devices. Fig. 2 is a front elevation of the paper-cutting device for the wrapper. Fig. 3 is a vertical section of the paper-cutting-device shown in Fig. 2, taken on the dotted line 3-3, the knife being shown in its elevated position. Fig. 4 is a vertical section of the paper-cutting-device shown in Fig. 2, taken on the dotted line 4-4. Fig. 5 is an enlarged detail showing a portion of the knife in its lowermost position, and one of the presser-bars. Figs. 6 and 7 are details to be referred to.

The paper, from a paper-carrying roll, not shown, is fed to the cutting-off device by intermittently operated means, and for the sake of illustration, said means, as herein shown, consists of a pair of positively driven feed-rolls 41, 42. The feed-rolls each have secured to them, at one end, a toothed gear, 51, 52, which engage each other, whereby one of the rolls, as for instance the upper roll, can be driven by the other or lower roll. The lower feed-roll 42 has secured to it, at its opposite end, a flanged disk 59, and has loosely mounted upon its shaft, adjacent to said disk, a toothed gear 53, bearing pawls, see Fig. 7, adapted to engage the inside of a flange on said disk 59. A pinion 58, mounted on suitable bearings, engages said gear 53, and a rack-bar 54,

engages said gear 58, which is supported in suitable bearings, and is loosely connected to the upper end of an upright arm 55, which is pivoted at its lower end to the frame work. The arm 55 has a slotted extension 56, to which a rod 57 is adjustably connected, the opposite end of said rod being connected with an eccentric which is mounted on the shaft f^5 . As the shaft f^5 revolves the arm 55 is oscillated and the rack-bar reciprocated and the feed-rolls driven to intermittently feed the paper.

Each feed roll has a plurality of circumferential grooves or spaces 301, thus providing a plurality of circumferential paper-engaging portions. A guide-plate 302 is located between the pair of feed-rolls and the cutting-off device, upon which the paper rests as it is moved along, and said guide-plate has fingers 303 along one edge which extend between the feed-rolls, occupying positions in the circumferential grooves 301 thereof. The guide-plate 302 is secured to one side of a frame-bar or table 304, with its top flush with the top of said table, and thereby forming an extension or part thereof. The frame-bar or table 304 is formed or provided with a flat top over which the paper is fed, and extends transversely of the machine, and is made longer than the width of the strip of paper, and has formed in its upper face a slot or groove 305, extending longitudinally thereof, which is adapted to receive the lower or cutting edge of a vertical knife 306, which is employed for cutting the paper to form the wrapper.

The vertical knife 306 is carried by a cross-head 307 extending transversely of the machine, and the lower edge of said knife, which is adapted to serve as the cutting-edge, is corrugated and sharpened to thereby present a series of sharpened teeth as a cutting edge. The cutting edge of the knife, however, may be otherwise formed. The cross-head 307 is guided at its ends by vertical guides 308 which extend upward from the table. The opposite ends of said cross-head are connected by links 309 to the extremities of arms 310, secured to the opposite ends of a transversely disposed rod 312, having its bearings in the frame-work, said rod thus serving as a pivot shaft for the arms. One of said arms 310 is loosely connected by a rod 70 to one end of a lever 71, pivoted at a point intermediate its length, as at 72, the other end of said lever being connected by a bar 73 with one end of a lever 313 pivoted at a point intermediate its length, as at 314, the other end of said lever 313 bearing a stud 74, with or without a roll thereon, which works in a groove 75, formed in a disk 76, which is secured to the main shaft f^5 . As the shaft f^5 revolves the arms 310 are moved up and down and the knife correspondingly moved.

The paper which is used to form the wrappers is very thin, and to hold it firmly on the table, while cutting it, a pair of parallel presser bars 313, 316 are provided, which are located one at each side of and close to the vertical knife, so that when depressed they will engage and hold the paper as close as possible to the knife-receiving slot. The presser bars 315, 316 are movable vertically toward and from the paper, being guided at their ends by the vertical guides 302 which guide the cross-head. Both presser bars are supported upon a single pair of yielding or spring actuated studs 319, which are set in sockets in the table 304, near the opposite ends thereof. The studs are caused to project from their sockets by springs 323, and act to lift both presser bars which rest upon them, and to normally hold said bars in an elevated position above the table so as not to obstruct the passage of the paper beneath them. Other means, however, may be employed for lifting both presser-bars and for holding them in elevated position above the table. Means are provided for exerting a yielding pressure upon the presser bars, whereby they are moved downward, into engagement with the paper on the table, and as herein shown, vertically disposed springs 318 are placed between each presser-bar and the cross-head, there being at least two springs for each presser-bar, located near the ends thereof. When the cross-head is in its elevated position no pressure, or practically no pressure, is exerted upon the springs 318, and hence the spring actuated studs 319 will act to lift the presser bars and support them in elevated positions, but when the cross-head descends pressure is exerted upon the springs 318, and the latter cause the presser-bars to descend against the action of the yielding studs 319. The normal elevated position of the presser-bars is below the cutting edge of the knife, so that as the cross head bearing the knife, descends, the presser-bars will first engage the paper, and then as the cross-head continues to descend, after the presser bars have engaged the paper, the knife will advance beyond the presser bars and will sever the paper as it enters the knife-receiving slot. The cross-head is operated to force both presser-bars down upon the paper at each side of and close to the knife-receiving slot, and also to thrust the knife downward to sever the paper when the feeding device ceases to operate, so that the paper is at rest when engaged by the presser-bars. As the knife rises, after having severed the paper, the presser-bars still remain in engagement with the paper and hold the severed ends during the first part of the return movement of the knife. Each presser-bar has on its under side a strip 317 of rubber or equivalent yielding material, which, when the presser-bar is in its lowermost position, engages the paper and holds it firmly on the table.

The presser-bars are formed with flat paper-engaging faces in parallelism with the top of the table, and each stud 319 is formed with a flat top or end, also in parallelism with the top of the table, and each stud is made large enough in diameter and is so disposed as to be engaged by both presser-bars 315, and by thus forming and locating the studs, the presser-bars, which bear upon them, will be caused to simultaneously engage the paper at opposite sides of the knife-receiving slot. The studs 319, therefore, act as controlling means for controlling the relative positions of the presser-bars as well as supports therefor. The lower or cutting edge of the knife is cut away or slotted at each side to provide recesses for the studs 319 to enter, as it descends and enters the knife-receiving slot.

Between the pair of paper feed-rolls 41 and 42, and the knife, means are provided for continuously holding the paper on the table, and for the sake of illustration, said means consists of a bar 320, having a slightly curved under face, and having holes at each end which fit loosely upon pins 321, projecting upward from the table. The pins 321 are formed or provided with shoulders at their bases, and the bar 320 rests by gravity upon said shoulders, just above the top of the table, so that beneath said bar a very narrow space is provided for the passage of the paper.

The paper used for wrapping oranges and most articles is very thin, and in practice much difficulty is experienced in cutting the paper with shears, as shown in the patent heretofore referred to, notwithstanding great care is exercised, as the shears must be kept very sharp and also must be accurately adjusted to cut the thin paper, and the ordinary skilled workman cannot be depended upon to keep the shears in proper working order, hence the employment of the knife, as herein shown and described. No adjustment is required for the knife, and there is but one blade to sharpen, therefore it possesses many advantages over the shears.

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

In a wrapping machine, the combination of intermittently operated means for feeding the paper, a table having a knife-receiving-slot, a knife, a cross-head to which it is attached, guides therefor, links connected to the opposite ends of said cross-head, arms to which the lower ends of said links are connected, a rock-shaft to which both arms are connected, a rod connected with one of said arms, a pivoted lever to which said rod is connected, and means, operated by a rotating member for moving said lever on its pivot to operate the knife, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

MILTON H. BALLARD.

Witnesses:

B. J. NOYES,
H. B. DAVIS.