No. 764,806. PATENTED JULY 12, 1904.

H. H. HAM.

TOILET PAPER HOLDER AND CUTTER.

APPLICATION FILED MAR. 7, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

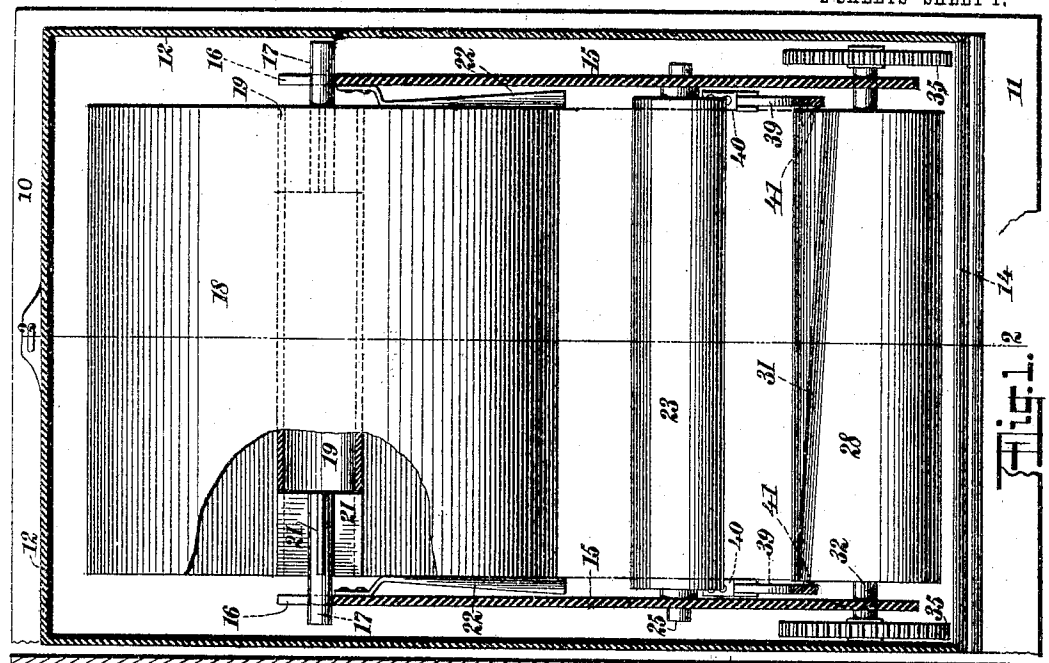


Fig. 1.

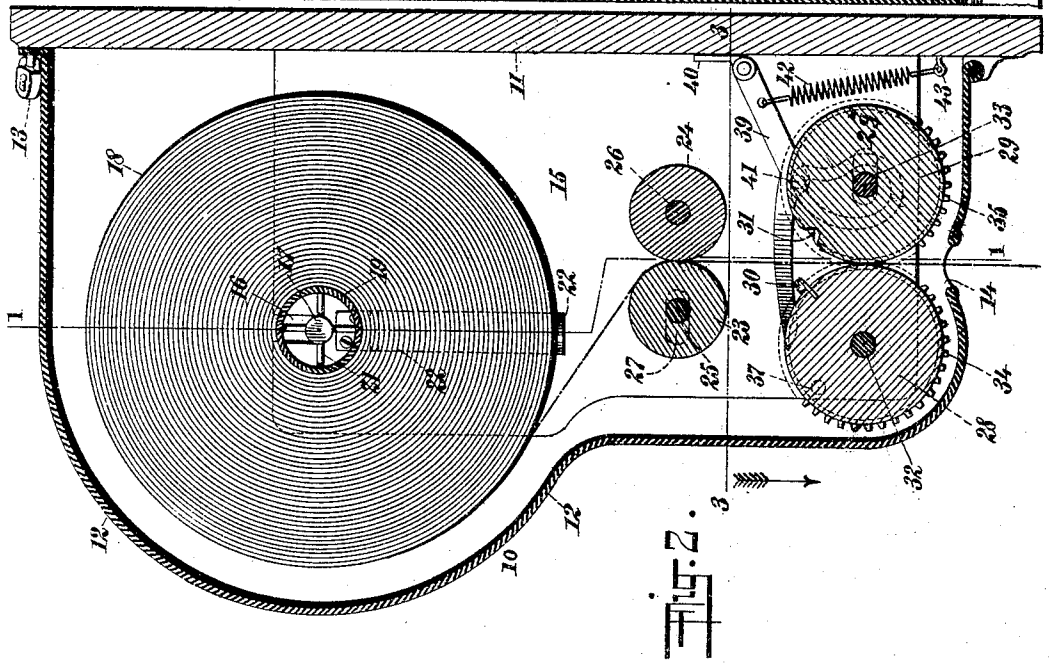


Fig. 2.



Fig. 3.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

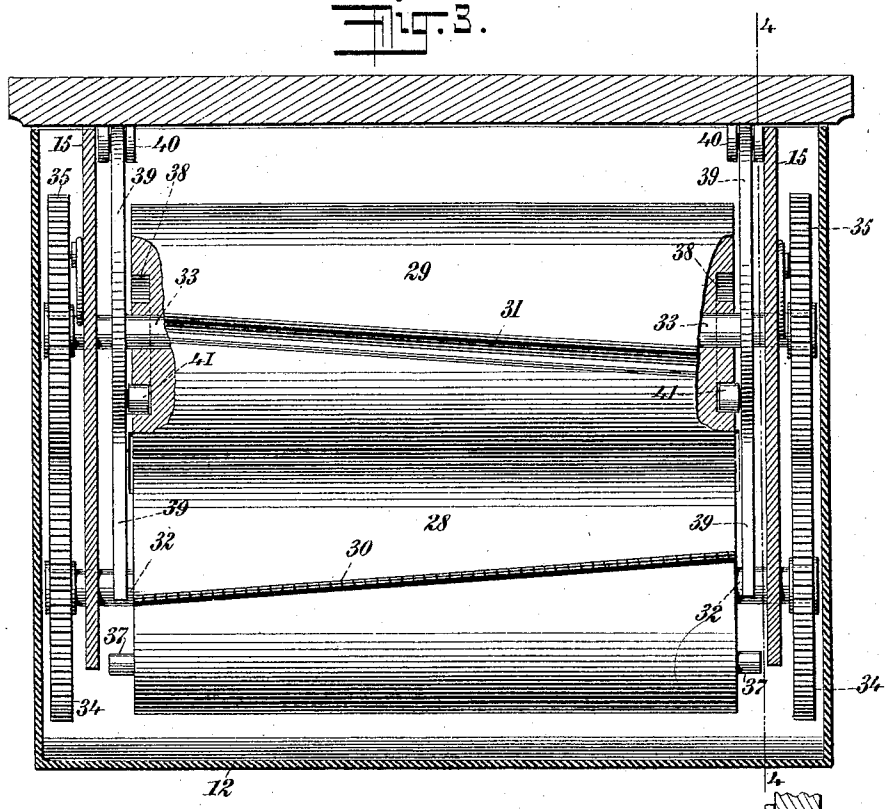


Fig. 4.

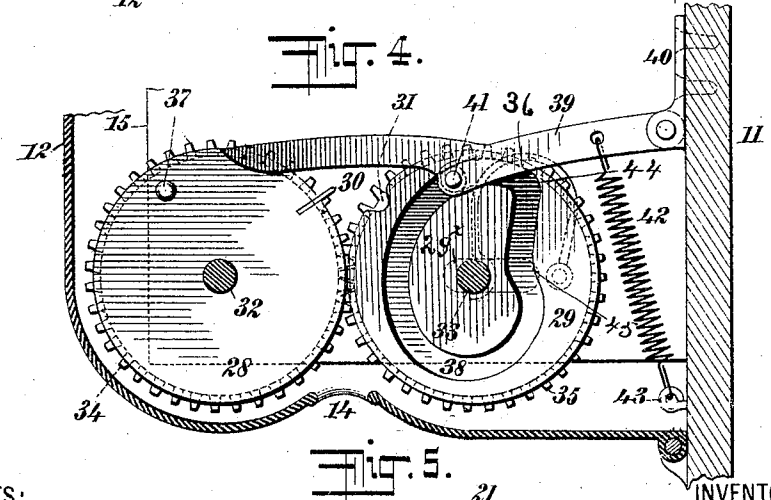
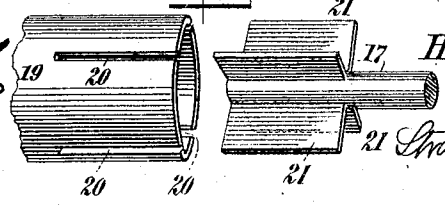


Fig. 5.



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UNITED STATES PATENT OFFICE.

HERBERT H. HAM, OF NEW YORK, N. Y., ASSIGNOR TO CHARLES J. PEARSON AND FRANK M. UNWIN, OF NEW YORK, N. Y.

TOILET-PAPER HOLDER AND CUTTER.

SPECIFICATION forming part of Letters Patent No. 764,806, dated July 12, 1904.

Application filed March 7, 1904. Serial No. 196,892. (No model.)

To all whom it may concern:

Be it known that I, HERBERT H. HAM, a citizen of the United States, residing at the city of New York, borough of Brooklyn, Kings county, in the State of New York, have invented certain new and useful Improvements in Toilet-Paper Holders and Cutters, of which the following is a full, clear, and exact specification.

My invention relates to improvements in apparatus for holding a continuous strip or roll of paper and for severing or partially severing the end of the web into sheets of predetermined length as the same is drawn from the apparatus; and said invention has for its object more particularly to provide a simple, durable, and efficient apparatus for holding toilet-paper by means of which the same may be cut, slitted, or perforated to divide the end of the web into sheets of equal sizes as the same is drawn from the holder and thence advance or feed forward the uncut portion of the web after the same has been acted upon by the cutting mechanism sufficiently to present its end beyond the casing to enable the operator to grasp the same in order to properly operate the apparatus.

These objects above set forth I am enabled to attain by means of my invention, which consists in the novel details of construction and in the combination, connection, and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, wherein like numerals of reference indicate like parts, Figure 1 is a front view, partly in section, on the line 1 1 of Fig. 2, showing an apparatus constructed according to and embodying my invention. Fig. 2 is a vertical section of the same, taken on the line 2 2 of Fig. 1. Fig. 3 is an enlarged detail horizontal section taken on the line 3 3 of Fig. 2 looking in the direction of the arrow. Fig. 4 is an enlarged detail section taken on the line 4 4 of Fig. 3. Fig. 5 is an enlarged detail perspective view showing the construction of the core of the paper-roll and the means for supporting the same, and Fig. 6 is a detail perspective view of one of the springs for holding the paper-roll under tension in the holder.

In said drawings, 10 designates the apparatus, comprising a base of suitable outline 11 and a casing 12, which is suitably hinged at its lower edge to said base and secured thereto at its upper end by a locking device 13.

14 denotes a delivery-slit extending across the bottom of the casing 12, through which the end of the web or paper normally extends.

Upon the base 11 adjacent to its vertical edges are secured side plates 15 15, which are provided upon their upper ends near their forward edges with downwardly-extending recesses 16 16, adapted to receive the ends of the shafts 17 of the paper-roll 18. By preference I make the paper-roll 18 with a tubular core 19, upon which the paper is wound, and provide said core 19 at each of its ends with a plurality of inwardly-extending longitudinal slits 20, and into the slitted ends of said core 19 I insert the supporting devices consisting of short shafts or stems 17, provided at their inner ends with longitudinal projections or blades 21, corresponding in size and number with the slits 20 of the core 19, which are adapted to be fitted into the same and held in position therein by frictional contact, the ends of the shafts or stems 17 which project beyond the ends of the core 19 forming trunnions by means of which the paper-roll is supported within the recesses 16 of the plates 15.

Upon the inner surfaces of the plates 15 adjacent to the inner ends of the recesses 16 are secured the ends of springs 22, the lower free ends of which are adapted to bear against the ends of the paper-roll 18 to hold the same under tension. Said springs 22 are preferably provided with inwardly-tapering ribs or concaved, as shown. Below the paper-roll 18 are arranged guide-rollers 23 24, mounted upon shafts 25 26, respectively, whose ends are supported in the side plates 15 15, the roller 23 being yieldingly supported in a spring-bearing 27 in order to insure the proper contact between the web and the surfaces of said rollers 23 24. Below said guide-rollers is ar-

ranged the means for cutting or severing the web and then advancing or feeding forward the uncut portion of said web, said mechanism consisting of the cutting-rolls 28 and 29, the former being provided with a diagonal serrated knife 30 and the latter with a groove 31, adapted to register with the knife 30. The said cutting-rolls 28 and 29 are mounted upon shafts 32 33, respectively, having their ends extending through the plates 15 and the projecting ends of the shaft 32 provided with gear-wheels 34 34 and the projecting ends of the shaft 33 provided with similar gear-wheels 35 35, meshing with the gear-wheels 34 34 aforesaid. The ends of the shaft 33 supporting the grooved roll 29 extend through slots $29^{\times}$ in the side plates 15 and are yieldingly supported by means of loop-shaped springs 36, having each one end secured to the side plates 15 and their free ends provided with hook members, within which the ends of said shaft 33 are supported.

The knife-roll 28 is provided upon its ends near its periphery with projecting studs 37, and in the ends of the grooved roller 29 are provided cam-grooves 38.

39 denotes bent arms which are pivotally supported at their lower ends in bearings 40, arranged upon the base 11, while their upper free ends are rounded and adapted to contact with the studs 37 of the knife-roll 28, and 41 denotes studs arranged upon the inner surface of the bent arms 39 intermediate the free and pivoted ends of said arms 39, which studs 41 work within the cam-grooves 38 of the roll 29.

42 denotes coil-springs having their ends secured to the bent arms 39 adjacent to the pivoted ends of said arms and their other ends secured in eyes 43 on the base 11, whereby to hold said arms 39 in position drawn toward the axis of said cutting-rolls.

The operation of the apparatus is as follows: Assuming that the roll 18 has been properly placed in position intermediate the plates 15, the end of the web passed between the guide-rollers 23 24 and between the cutting-rolls 28 29, and the latter rotated sufficiently to cause about an inch or so of its end to project out of the slit 14 in the bottom of the casing, it simply becomes necessary to grasp the projecting end of the paper and draw the same downwardly and outwardly away from the base 11, thereby causing the cutting-rolls to rotate toward each other. As soon as the knife 30 of the roll 28 comes into register with the groove 31 of the roll 29 the web of paper will be cut and severed by the action of said rolls. Simultaneously, or nearly so, with said operation of cutting, the arms 39 will contact with the studs 37 of the roll 28 and the studs 41 of the arms 39 ride over the points 44 in the cam-grooves 38 and wipe against the concaved surfaces 45 of said cam-grooves and by the action of the springs 42 cause the rolls 28 29 to be rotated to the extent of about one-quarter of a revolution and feed the uncut portions of the paper forward a corresponding amount. This operation may be repeated until the roll 18 is exhausted.

It is to be noted that the length of the sheet is rendered uniform, since each sheet corresponds in length to the circumference of the cutting-rolls 28 29, and that by varying the diameter of said rolls the length of the sheet may be increased or diminished, as desired. Further, it will of course be understood that the cutting-rolls may be constructed to sever the sheets completely from the body or the web or sever the same only partially therefrom by slitting or perforating the same.

Without limiting myself to the details of construction, which may be varied within the scope of the invention, what I claim, and desire to secure by Letters Patent, is—

1. An apparatus for the purposes specified comprising a support adapted to hold a continuous strip or web of paper, a pair of cutting-rolls; one of said rolls having a longitudinal knife, and the other a longitudinal groove, said rolls coöperating to act upon the end of said strip or web at regular intervals, a member pivotally secured at one end adjacent to the ends of said cutting-rolls and its free portion adapted to engage the same, and spring means for actuating said pivoted member to partially rotate said cutting-rolls to feed forward the uncut portion of said strip or web, substantially as specified.

2. An apparatus for the purposes specified comprising a support adapted to hold a roll of paper, a pair of cutting-rolls; one of said rolls having a longitudinal knife, and the other a longitudinal groove, gear-wheels arranged adjacent to the ends of said rolls meshing with each other, guide-rollers arranged intermediate the roll of paper and cutting-rolls, a stud arranged upon the end of one of said cutting-rolls, and a cam upon the end of the other of said cutting-rolls, an arm having one end pivoted upon the support and its free end adapted to engage the stud and cam in the cutting-rolls, and means for actuating said arm to partially rotate said cutting-rolls to feed forward the uncut portion of the paper strip or web, substantially as specified.

3. An apparatus for the purposes specified comprising a support adapted to hold a roll of paper, a pair of guide-rollers mounted upon shafts and disposed below said roll of paper, a pair of cutting-rolls mounted upon shafts and arranged below the guide-rollers, gear-wheels fixed upon the outer ends of said shafts, and meshing with each other, studs arranged upon the ends of one of said cutting-rolls and cam-grooves arranged in the ends of the other of said cutting-rolls, arms provided intermediate their ends with inwardly-projecting studs, and pivotally secured at their ends to the support, and spring means whereby to

cause the free portions of said arms to coöperate with the studs and cam-grooves of the cutting-rolls to partially rotate said rolls to feed forward the uncut portion of the strip or web of paper, substantially as specified.

4. An apparatus for the purposes specified comprising a support, a casing therefor provided with a delivery-opening therein, a frame arranged upon said support, having recesses therein to receive the ends of a paper-roll-supporting shaft or reel, springs arranged upon said frame adapted to bear upon the ends of the paper-roll, a pair of guide-rollers mounted upon shafts and supported in the frame below the paper-roll, cutting mechanism arranged below said guide-rollers comprising a pair of rolls mounted on shafts extending through said frame; one of said rolls being provided with a diagonal, longitudinal knife, and the other with a longitudinal groove registering with said knife, gear-wheels fixed upon the outer ends of said shafts, and meshing with each other, studs projecting from the ends of one of said rolls, cam-grooves provided in the ends of the other of said rolls, arms provided intermediate their ends with inwardly-projecting studs adapted to work in said cam-grooves, said arms being pivotally secured at their ends to the support, and springs having their ends secured to said arms adjacent to their pivoted ends whereby to cause the free portions of said arms to coöperate with the studs and cam-grooves of the cutting-rolls to partially rotate said rolls, after each cutting operation, to feed forward the uncut portion of the strip or web of paper, substantially as specified.

Signed at the city of New York, in the county and State of New York, this 1st day of March, 1904.

HERBERT H. HAM.

Witnesses:

CHAS. H. TOMLINSON,

F. M. UNWIN.