G. T. JOHNSON.

SERVING APPARATUS FOR ROLL PAPER.

APPLICATION FILED OCT. 25, 1913.

1,097,327. **Patented May 19, 1914.**

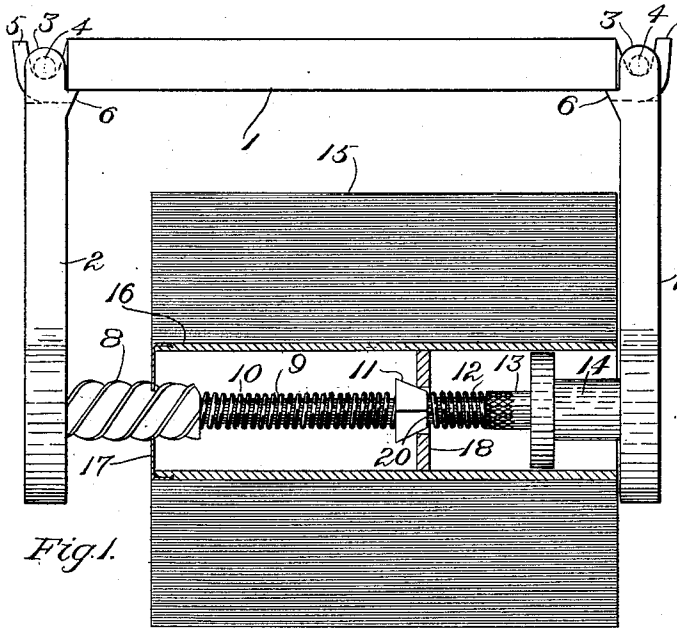


Fig. 1.

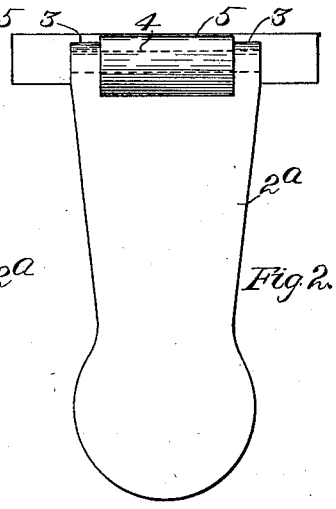


Fig. 2.

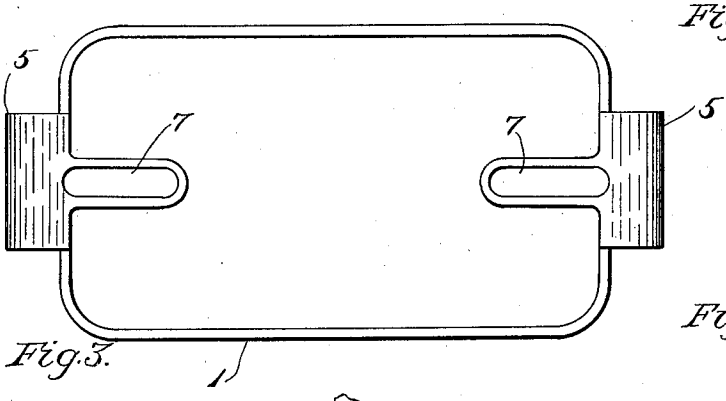


Fig. 3.

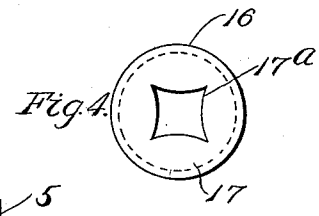


Fig. 4.

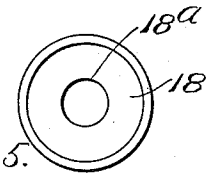


Fig. 5.

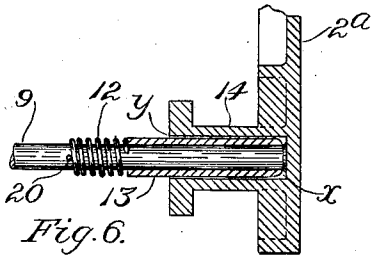


Fig. 6.

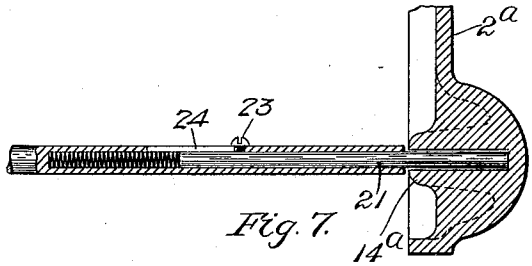


Fig. 7.

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UNITED STATES PATENT OFFICE.

GEORGE T. JOHNSON, OF MELROSE, MASSACHUSETTS.

SERVING APPARATUS FOR ROLL-PAPER.

1,097,327. Specification of Letters Patent. Patented May 19, 1914.

Original application filed April 26, 1913, Serial No. 763,795. Divided and this application filed October 25, 1913. Serial No. 797,172.

To all whom it may concern:

Be it known that I, GEORGE T. JOHNSON, a citizen of the United States, residing at Melrose, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Serving Apparatus for Roll-Paper, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to roll-paper holders or serving apparatus of the type illustrated by the holder or serving apparatus shown and described in the U. S. Letters Patent to G. F. Kearney, No. 1,047,535, granted December 17, 1912.

The invention has reference more especially to the employment of wound rolls of paper on the order of that shown, described and claimed in my application for U. S. Letters Patent filed April 26, 1913, Serial No. 763,795, out of which the subject-matter claimed herein has been divided. The said wound rolls respectively comprise a wound continuous length of paper, usually having transverse lines of weakening at distances apart corresponding with the lengths of successive portions intended to be detached separately in the form of sections or sheets for use as paper towels, toilet paper and the like.

An embodiment of the invention is illustrated in the drawings, in which latter,—

Figure 1 is a plan view of a fixture or serving apparatus embodying the present invention, showing in section a wound roll of paper on the order of that of my application aforesaid. Fig. 2 is an end view of the said fixture or serving apparatus with the wound roll omitted. Fig. 3 is a front view of the base or back-plate of the fixture. Figs. 4 and 5 respectively are views looking at the opposite ends of the core or carrier of the roll of paper. Figs. 6 and 7 are sectional detail views illustrating locking arrangements for the fixture.

Having reference to the drawings,—The frame-portions of the fixture shown herein comprise the base or back-plate 1 and the two side-arms 2, 2^a, each of the said arms being formed at its rear end with widely separated upper and lower ears or lugs 3, 3, and also being provided at such end with a pintle 4 constituted by a wire secured in said ears or lugs and extending from one to the other thereof, while the plate 1 is formed at each end thereof with a hook-shaped extension 5 to enter the space between the ears or lugs of the corresponding arm and between the wire pintle and the adjacent end of the body of the arm. Thereby the arms are detachably connected with the base or back-plate and permitted to be swung outward and backward to permit the application of a roll of paper, and subsequently to be swung inward into the closed position shown in Fig. 1. The vertical recess at the back of the hook-shaped extension 5 at each end of the base or back-plate receives the wire pintle of the corresponding side-arm and constitutes a bearing therefor. When the fixture is attached to a wall, the latter closes the said recess so that the wire pintle cannot leave its bearing. To limit the inward swinging movement of each arm so that when in its working position the arm shall extend forward at right angles from the plate, the arm is furnished with a lateral shoulder 6 which makes contact with the front face of the plate when the arm is swung inward into its working position. For the accommodation of screws or bolts for attaching the fixture to a wall or other support, the plate is formed with transversely elongated slots 7, 7, through which the stems of the said screws or bolts may be passed.

One of the side-arms, namely that marked 2, has attached thereto fixedly one end of a shaft extending across to the other side-arm, 2^a. The said shaft is spirally threaded as at 8, Fig. 1, for a portion of its length next adjacent the side-arm 2 to which the shaft is attached. The thread is a quick thread. The threading may be effected by grooving or milling the said portion of the shaft, or by forming the said portion polygonal in cross-section primarily and twisting it, so that the angles shall form a multiple thread, or by applying a similarly twisted polygonal tube. The remainder of the length of the shaft is of smaller diameter and is smooth and unthreaded. Upon the smaller portion 9 of the shaft are sleeved a longitudinally expanding spiral spring 10, a collar 11, adapted to slide upon the shaft lengthwise thereof, a smaller longitudinally expanding spiral spring 12, and a tube 13, the end of the latter extending to the end of the small portion of the shaft. A socket to receive the said tube is provided in a boss 14 projecting transversely inward from

the side-arm 2^a. The internal diameter of the socket is such as to provide a close but easy sliding fit for the tube 13.

The roll 15 of paper surrounds a cylindrical core or carrier 16 having two diaphragms or disks, each formed with a central hole for the passage therethrough of the supporting shaft. The disk 17 is provided with means to engage with the threaded portion 8 of the shaft. In Fig. 4, the hole 17^a through the said disk is quadrangular and the convex intermediate portions of the edge of the hole enter the depressions between the raised portions of the thread of the shaft. Consequently, the disk 17 is a nut-element. It engages with the threaded portion of the shaft like an equivalent of a nut. It centers the corresponding portion of the core or carrier and roll with relation to the shaft. The sliding collar 11 is shaped and proportioned so as to enable it to pass entirely through the hole 17^a, in the disk 17. In this instance it is square in cross-section and in such respect corresponds with the hole 17^a. It also is tapering to enable it to enter partway into the central hole 18^a of the disk 18 of the core or carrier, so as to fit tightly within said hole and serve to support and center the corresponding portion of the core or carrier and roll.

As thus far described, the construction and arrangement are such that when the core or carrier, with a roll of paper thereon, is mounted upon the shaft with the disk 17 engaged with the threaded part 8 of said shaft and with the disk 18 engaged with the exterior of the tapering collar 11, the core or carrier and roll will be supported concentrically with the shaft, and through the power of the longitudinally expanding spring 9 will be caused to occupy a position nearer the side-arm 2^a and with a clear space between the side-arm 2 and the next adjacent end of the core or carrier. When now the leading end of the strip of paper is pulled upon so as to draw the paper from the roll and cause the latter to turn, the turning movement, and the engagement of the disk 17 with the threaded portion of the non-rotating shaft, will cause the core or carrier and roll to travel endwise toward the side-arm 2, thereby causing collar 11 to compress the spring 9, until the increasing tension of said spring causes the strip to tear across at a line of weakening, or until the coils of said spring close up together, or it might be until either the core or carrier or the roll brings up against a suitable stop, in this case the said side-arm or a projection in connection therewith, whereby the endwise movement of the core or carrier and roll, and consequently the turning movement thereof, will be arrested and the continued pull upon the paper will cause the paper to part at the line of weakening between the periphery of the roll and the hand that is pulling upon the paper. The thread of the shaft being a quick thread, a small extent of turning movement of the roll, *i. e.* one or more turns thereof, will operate to carry the roll endwise to the predetermined limit. The endwise movement of the roll and core or carrier compresses the spring 9 lengthwise between the collar 11 and the shoulder at the end of the threaded portion of the shaft. The parting of the paper releases the roll so that the spring 10 is permitted to act against collar 11 to press the core or carrier and roll endwise toward the side-arm 2^a, the engagement of the disk 17 with the threaded portion of the shaft producing a reverse rotary movement of the core or carrier and roll. The roll comes to rest in its primary position with the free end of the strip of paper exposed in readiness to be grasped.

The core or carrier usually in practice is cylindrical. The holes in the disks 17 and 18 are formed centrally in the said disks, so that the core or carrier and the roll thereon naturally occupy a position concentric with the shaft.

The spring 12 between the sleeve 11 and the tube 13 serves as a yielding cushion by which the return movement of the core or carrier and roll thereon is checked.

Having reference to the locking arrangements, the close fit between the tube 13 and the inner wall of the socket in connection with side-arm 2^a into which it enters is such that the tube can enter the socket only when the tube and socket are presented in a straight line with respect to each other. As shown in Fig. 1, when side-arm 2^a stands at right angles to the plate, the inner end of the socket is located at the inner side of a plane at right angles to the plane of the plate and passing through the pivotal axis of the said side-arm. Assuming the parts to be related as in Fig. 1, it will be apparent that force acting with a tendency to swing the side-arm 2^a outward about the pivotal axis on which the said side-arm swings will tend to cause the socket occupied by the tube to become inclined in the direction of its length with respect to the tube, so that one point of the inner surface of the socket will cramp against the extreme end of the tube at the point x on one side of the axis of the latter and another point of such surface will cramp against the exterior of the tube at a point y at the diametrically opposite side of the said axis. The cramping or binding will prevent relative endwise movement of the socket with respect to the tube. As the tube is held from passing off the end of the shaft by the head that is formed in such end as in Fig. 6, the side-arm will thereby be locked in its inwardly closed position. The unlock-

ing of the side-arm 2ª is effected by moving the said side-arm into such position that the socket thereof is parallel with the exterior of the tube, thus rendering the tube free to have lengthwise movement within the socket, and then taking hold of the knurled exposed inner portion of the tube and sliding the tube inward along the shaft. This of course can be done only when the roll has been completely unwound and the core or carrier slitted or partly broken or cut away, for as long as any of the roll remains the tube is covered and inaccessible. Spring 12 yields to permit this hand-effected inward sliding movement of the tube. When the tube has been moved inward the short distance necessary to relieve the pressure of its extreme end against the interior wall of the socket during the outward swinging movement of arm 2ª, the cramping action will no longer occur when the said swinging movement is caused to take place, and consequently a complete outward swinging movement of the said side-arm is permitted. When this has happened, the core or carrier may be removed and preferably a roll wound upon another similar core or carrier may be placed upon the shaft, although in some instances the same core or carrier may be continued in use upon the shaft after having had a fresh roll mounted thereon. The hinge-connection of the arm 2 with the plate facilitates the operation of removing the core and placing a fresh roll upon the shaft, by rendering it possible to swing the said arm 2 outward so as to give the shaft a forwardly inclined position, in which the roll may more readily be applied. If this outward swinging movement of the arm 2 and forward shift of the shaft is not desired, and if a rigid connection of the arm 2 and the plate is found acceptable, then the said arm and the plate may either be formed integral with each other or fixedly connected together in any suitable manner. In the operation of closing the side-arm 2ª inward, the end of the boss around the socket therein first encounters the end of the tube and slides the tube inward along the shaft until the axes of the shaft and tube and the socket are all in a straight line or coincide, and the end of the tube registers with the entrance to the socket, whereupon the spring 12 projects the tube outward within the socket and the arm is permitted to assume its complete inward or working position.

The spring 12 acts to cushion the collar 11 in the return movement produced by the action of the spring 10. In addition, a stop-pin 20 applied to the shaft prevents too great a movement of the collar outward toward the arm 2ª. The said stop-pin also backs up the spring 12 so that the tension thereof shall oppose any undertaking to pick the lock by pushing back the tube by means of a blade or wire introduced into the central opening of the roll alongside the boss of arm 2ª when the roll has been caused to move over against the side-arm 2.

The boss 14 of arm 2ª constitutes an internal support and bearing for the end of the roll which surrounds the same.

In the preferred locking arrangement of Fig. 7, the shaft 9 is shorter than in the construction which has been described, the tube 13 is omitted, and the end-portion of the shaft has an axial bore receiving a pin 21 and a longitudinally expanding spring 22. The outer end-portion of the said pin extends beyond the end of the shaft, and normally is kept projected by the action of the spring to the limit fixed by a stop-screw 23 projecting from the pin 21 through a slot 24 in the tubular portion of the shaft, and adapted to engage with an end-wall of the slot. The action in locking and unlocking is essentially the same as in the case of the locking tube of the prior figures. The pin 21 is drawn lengthwise inward to effect the unlocking by taking hold of the exposed head of stop-screw 23.

The locking arrangements shown herein constitute a separate improvement or invention and I make no claim thereto herein.

I claim as my invention:—

1. In combination, a stationary non-rotating roll-supporting shaft with quick-threaded portion, a roll-core or center furnished with disks, one of which constitutes a nut-element coöperating with the said quick-threaded portion to produce endwise travel of the roll in one direction independently of the shaft when the end of the wound strip is pulled upon to unwind the same, and a spring upon the shaft acting against the other disk to return the roll endwise when the pull upon the strip terminates.

2. In combination, a stationary non-rotating roll-supporting shaft with quick-threaded portion, a roll-core or center having fittings with openings centrally of the roll, one of said fittings coöperating as a nut-element with said quick-threaded portion of the shaft to occasion endwise travel of the roll when the end of the wound strip is pulled upon to unwind the same, a collar upon the shaft acting in connection with the other fitting to center the roll, and a spring acting upon the said collar to return the roll endwise when the pull upon the strip terminates.

3. In combination, a dispensing fixture having a stationary non-rotating roll-supporting shaft with quick-threaded portion, the said shaft adapted for the direct application thereto of a roll of paper or the like having as a permanent part thereof a nut-element coöperating with said quick-threaded portion to produce endwise travel of the roll in one direction independently upon the

shaft when the end of the wound strip is pulled upon to unwind the strip, and a spring acting to return the roll endwise when the pull upon the strip terminates.

4. In combination, a dispensing fixture having a stationary non-rotating roll-supporting shaft with quick-threaded portion, the said shaft adapted for the direct application thereto of a roll of paper or the like having as a permanent part thereof a core furnished with a nut-element coöperating with the said quick-threaded portion to produce endwise travel of the roll in one direction independently upon the shaft when the end of the wound strip is pulled upon to unwind the same, and a spring acting upon the core to return the roll endwise when the pull upon the strip terminates.

5. In combination, a dispensing fixture having a stationary non-rotating roll-supporting shaft with quick-threaded portion, a roll of paper or the like having as a permanent part thereof a core furnished with disks, one of which constitutes a nut-element coöperating with the said quick-threaded portion to produce endwise travel of the roll in one direction independently of the shaft when the end of the wound strip is pulled upon to unwind the same, and a spring upon the shaft acting against the other disk to return the roll endwise when the pull upon the strip terminates.

6. In combination, a dispensing fixture having a stationary non-rotating roll-supporting shaft with a quick-threaded portion, a roll of paper or the like having as a permanent part thereof a core with fittings having openings centrally of the roll, one of said fittings coöperating as a nut-element with said quick-threaded portion of the shaft to occasion endwise travel of the roll when the end of the wound strip is pulled upon to unwind the same, a collar upon the shaft acting in connection with the other fitting to center the roll, and a spring acting upon the said collar to return the roll endwise when the pull upon the strip terminates.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE T. JOHNSON.

Witnesses:
CHAS. F. RANDALL,
ELLEN O. SPRING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."