M. J. WARD.

TYING DEVICE.

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1,067,387. **Patented July 15, 1913.**

Fig. 1.

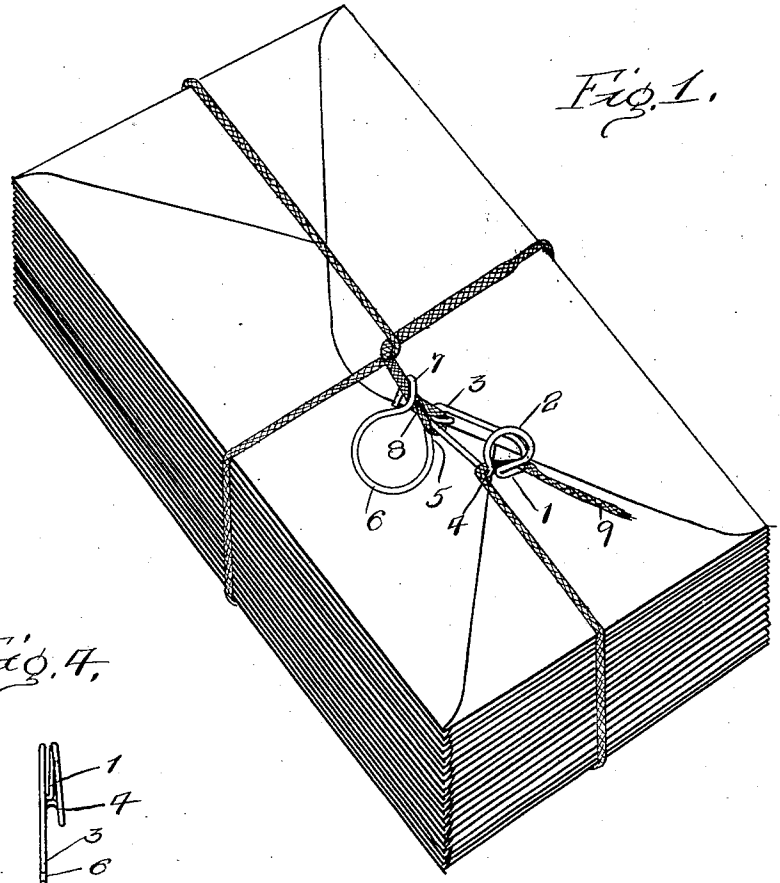
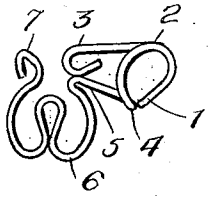


Fig. 4.

Fig. 2.



Fig. 3.



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TYING DEVICE.

1,067,387. Specification of Letters Patent. Patented July 15, 1913.

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To all whom it may concern:

Be it known that I, MARZY J. WARD, a citizen of the United States, residing at Unadilla, in the county of Otsego and State of New York, have invented certain new and useful Improvements in Tying Devices, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to tying devices and more especially to those of the type disclosed by my prior Patent No. 428,434, granted May 20th, 1890.

The objects of the invention are to provide certain improvements in the form of the tying device which will adapt it to hold the cord more firmly and which will also prevent possible tangling of the devices when they are placed in bundles for storage or transportation.

The tying device shown in the accompanying drawings is especially adapted for use in tying up packages of papers as, for instance, mail matter which is ready for transportation.

Of the drawings—Figure 1 is a perspective view showing my improved tying device applied to a package of letters. Fig. 2 is a plan view showing in greater detail the shape of the device and the mode of attaching the cord. Fig. 3 is an enlarged plan view showing a modified form of handle. Fig. 4 is a side elevation of the device.

Referring to the drawings, it will be noted that in the preferred form of my invention, the tying device proper is formed of a single piece of wire. The wire is bent sharply on itself at 1 to form what will be termed a V. This V has a very slight angle of divergence. As best shown in Fig. 2, the sides of the V are formed straight throughout a short distance. They are then curved parallel to one another approximately in the arc of a circle. At 2 the lower of the two parallel wire parts extends tangentially to the curve toward what will be termed the rear part of the device. This part of the wire terminates in the partially closed hook or eye 3. The upper of the two parallel wire parts before mentioned extends in a continuous curve past the point 2 to the point 4, where it is bent sharply downward then backward substantially parallel to itself and then at an angle toward the rear part of the device. In this way there is formed at 4 a snub, over which the cord to be fastened may be passed. At the point 5, practically opposite to the hook 3, another hook is formed, and the wire extends from this hook 5 to form a handle 6 which may, if desired be in the form of a simple loop. The part of the wire forming the handle terminates in the eye 7. This eye is wedge-shaped, the pointed part extending diagonally away from the front of the tying device and at an acute angle to the line of tension of the cord for the purpose to be hereinafter described.

It will be understood that all parts of the tying device with the exception of the upper of the two wire parts forming the V and the snub lie in a single plane.

The mode of attachment of the cord is best shown in Fig. 2. I prefer to use a hollow braided cord. In the preferred form of the invention, the eye 7 is left partially open and the cord is passed downward through the eye 7, downward through the hook or eye 3, upward over the hook 5, and the end of the cord is then drawn at 8 into the hollow part of the before described portion of the cord for such a distance as may be found desirable to obtain sufficient frictional engagement between the two parts. After the cord has been put in place as described, the eye 7 is closed, thus engaging the outer of the two concentric cords to cause additional frictional engagement between them. It will be noted that the direction of the wedge-shaped part of the eye 7 is such that as tension is put on the cord it will be drawn farther back into the wedge and thus still more firmly gripped.

I do not desire to be limited to the exact relationship between the cord and the various wire parts which I have described. For instance, the cord may first pass either upward or downward through the eye 7 and either upward or downward over the hooks 3 and 5.

It will be noted that the hook 3 is left

partially open, the opening being such that the cord may be forced through it during the process of attachment. At the same time, the opening is sufficiently narrow to frictionally engage the cord and prevent its working out of the eye toward the forward part of the device. It will also be noted that the two adjacent parts of the eye 3 and the eye 5 diverge from one another. This divergence also tends to prevent the lower edges formed in the cord from slipping forward.

The operation of this tying device is shown in Fig. 1. The part of the cord to be fastened first passes over the snub 4 and then extends at an angle to itself into the V 1. By pulling on the end of the cord which is marked 9, any desired tension may be obtained. As soon as the stress on the end 9 is released the cord is at once drawn into the V and securely held. When it is desired to release the device a slight tension on the end 9 draws the cord out of the V, and the device is entirely loose from the package.

It will be noted that in wrapping a package the cord will always cross itself at a point near the tying device. Previous to my invention this has been the cause of excessive wear on the cord at this point. With the construction herein shown and described ample reinforcement is provided by means of the two concentric cords, and any wear that may occur will not prove excessive. The looping of the cord back within itself gives an extremely efficient and neat means of attachment. The end of the cord which would otherwise become somewhat raveled and unsightly is entirely concealed. Furthermore, I find that the outer cord when in tension exerts a powerful gripping tension on the inner cord. In fact, when the outer cord is in tension it is almost impossible to pull out the entire cord by any means whatever.

In Fig. 3 I have shown a modified form of handle for my device. In this modification, the handle is formed in two loops, each of the loops being of such a size that the ring of a similar tying device, formed by the snub, the V and their connections, will not enter. It will be understood that the loops may be of any desired form, and I do not therefore wish to limit myself to the exact shape shown.

I have found that when the tying devices are placed in bundles there has been a tendency for them to become entangled by one part or another of one tying device entering the handle of another tying device. By my present invention, I have entirely obviated this difficulty. It will also be noted that I form the V preferably in actual contact with the snub 4. Prior to my invention a considerable space has been left between the V and the snub. By bringing these into engagement I am able to produce a much stronger device, it being impossible for any tension, however great, to move the V relatively to the snub, and am also enabled to use a longer and more gradual V, which gives a more secure grip on the cord. This construction also prevents the V from being hooked over any part of another tying device.

It will be observed that it is not absolutely necessary that the point of the V be normally in actual contact with the snub. When these parts are separated by only a very small distance they will yield sufficiently under a heavy stress on the cord to come into actual contact, thus adding the required strength to the device in this way. It will of course be remembered that it is only in the case of the larger and more unusual stresses that this additional strength of the device is particularly needed. It will also be noted that tangling is as effectually prevented when the snub and V are separated by a distance less than the diameter of the wire as when they are in actual contact.

The formation of a straight portion of the V gives a more efficient grip on the cord than would otherwise be possible. It will be noted that this straight part extends directly toward the snub and, therefore, as tension is placed on the main cord the entire tendency is to draw the cord into the point of the V, there being practically no tendency to draw it sidewise out of the V.

What I claim is—

1. The combination of a cord, and a tying device permanently attached thereto, the said tying device comprising a single piece of wire bent to form a cord engaging snub and a cord gripping V with a connection between them, the said snub, V and connection forming a continuous substantially closed ring, the said wire being also bent to form a handle composed of a plurality of loops, each loop being of such a size that neither the handle nor the ring of another similar device of the same size and form may enter and become engaged, substantially as set forth.

2. The combination with a cord, of a tying device permanently connected thereto and comprising a single piece of wire bent to form at one point a cord engaging snub and at another point a cord gripping V having its point directed toward and engaging with the snub, the ends of the wire lying adjacent to points intermediate the ends, and the whole tying device being so arranged and constructed that there are no exposed points or hook-like elements liable to cause tangling with other similar devices.

3. The combination with a cord, of a tying

device permanently connected thereto and comprising a single piece of wire bent to form at one point a direction changing snub for the cord and at another point a V for frictionally engaging the cord, the said snub and V being arranged to form parts of a substantially closed ring and the whole tying device being so constructed that there are no exposed hook-like parts liable to cause tangling with other similar devices.

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

MARZY J. WARD.

Witnesses:

ARNOLD W. SHERMAN,
JEROME S. SEACORD.

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