This invention relates to an improved device for the knotless tying up of parcels, packages, mail matter and the like.

Of course, the above are already known, which comprise a base-plate provided with a hole (cord- or tape-hole) for securing the cord or tape, a thumb-aperture for securing the plate in a more efficient manner on tying up the parcel and a clamping disk for the cord or tape, preferably wound a number of times around the parcel or the like.

Fig. 1 is a plan view of a known construction, Fig. 2 is a plan view showing the present invention as applied to a package of letters,

Fig. 3 is a longitudinal cross sectional view, Figs. 4, 5 and 6 are perspective views of three different constructions of accumulating devices, and Figs. 7 and 8 are perspective views showing the mode of employing the same.

As shown in Fig. 1 an essential drawback of the known constructions consists in that the hole for the cord or tape is disposed outside the section or area bordered by the two centre lines c and c1 being this the case either in the continuation of the axis x—y passing through centre of the thumb-aperture and the centre of the clamping disc and hole 2 or if the said hole is not disposed in the said axis as the hole illustrated in dotted lines. Thereby the following drawbacks arise:

- On tying the bundle in the direction of the arrow P and P1 respectively the tape is hampered by the hand holding the bundle, so that the tying operation is performed "over the hand" as it is termed in the trade. However if the tape is passed in the direction of the arrow P and P1 respectively, particularly if during the winding of the tape the same is pulled tight, a lever-arm h and h1 respectively results with respect to the fixing point of the plate, which rotates the latter in the direction of the arrow P2, this being very detrimental to a quick manipulation and the good and tight tying up of the parcel.

According to the present invention the tape-hole is arranged between the thumb-aperture and the clamping disk, whereby results a quite free field for the hand guiding the tape and further the lever-arm tending to rotate the base-plate is reduced to such an extent, that the tying operation is not interfered with any more.

Figs. 2 and 3 of the accompanying drawings show, by way of example, one construction of the device according to the present invention. In these figures, the numeral 1 designates the base-plate, 2 the tape-hole for securing the cord 3, 4 the thumb-aperture and 5 the clamping disk forming with the base-plate 1 a clamping recess.

The lever-arm, arising during the tying of a package 7 is reduced to the distance h1 by this arrangement of the three essential parts of the device. From the tying diagram shown in Fig. 2 it will be seen, that the hand holding the plate 1 does not interfere in any way with the tying operation, so that the section or area for the hand guiding the tape remains quite clear.

The clamping recess 6 has a rectangular cross section and the inside width of the cross section is greater than the diameter of the cord 3. This relation is clearly obvious from Figure 3 of the drawings. The advantage of this arrangement over the known conical and resilient clamping devices resides in the fact that the clamping of the cord is not effected by pressing a layer of cord between two walls of the clamping structure but the necessary clamping action is effected only by two relative layers of cord. The cord will thereby not be subjected to wear and tear and will have a longer life. Moreover it can be easily inserted in the clamping recess which is necessary for a quick tying operation.

It will be noted that the hole 2 lies substantially at the point of intersection of two straight lines, the one of which is a tangent common to the thumb aperture 4 and to the clamping disk 5, and the second of which is the tangent to said disk 5 which is at right angles to the first tangent, the said second tangent being substantially coincident with the first lap of the cord 3 in the tying operation.

If the devices just described are employed for the transmission of mail matter by or between post offices it will be necessary to provide an arrangement for assembling or piling up the said devices after they are removed from the mail matter or the like, in order to quickly assemble a greater quantity of the removed devices to a bundle, ready for dispatch.

As shown in Fig. 4, the post on which the removed tying up devices are assembled consists of a cylindrical shaft 11, which is provided with a pointed bottom end and near the latter carries a disc 12, the top end of the said shaft being in the shape of a loop or eye 13. On employing the device for assembling the removed tying up devices, the first tying up device by means of its aperture 4 is threaded onto the shaft 11 in such a manner, that it rests on the disc 12, whereby the disc 5 of the tying up device is facing downward (Fig. 7). Now the cord 3 of this
tying up device is threaded through the loop or eye 13 of the shaft in the manner shown in Fig. 7. The other tying up devices are threaded onto the shaft 11 one after the other, whereby the discs 5 are facing upward and the shaft 11 as well as both parts of the cord 3 (the part passing from the tying up device upward and through the loop 13 and the part hanging down from the latter) belonging to the first tying up device pass through the aperture 4 of the second and successive tying up devices. If it is desired to lift off the pile of tying up devices, the free end of the cord 3 of the first tying up device is pulled out of the loop or eye 13 and now all tying up devices are threaded on a single cord, viz., that of the first tying up device. As it is shown in Fig. 8, this cord can be secured in the clamping recess 6 of the first tying up device by being wound round a number of times.

As it is shown in Fig. 8, the cords hanging down from the tying up devices can be united to form a kind of tresses by making one or two knots, in order to prevent these cords to get entangled during the conveyance of the bundle of tying up devices.

Figs. 5 and 6 show modified constructions of the assembling post. In the construction illustrated in Fig. 5, the top end of the shaft 11 is furnished with an eye 13, which is provided with a slot 13a for inserting the cord. The disc 12 is of rectangular shape and is mounted on the shaft 11 in an inclined position. In the embodiment shown in Fig. 6, the top end of the shaft is furnished with a clamping slit 13b only and the disc 12 is removably mounted on the shaft 11 and rests against a collar 11a of the latter.

I claim—

1. A device for the knotless tying up of parcels, packages, mail matter, and the like, comprising a base plate, a thumb-aperture in the said plate, a clamping-disk fixedly and rigidly mounted upon and in spaced relation to the said plate, a hole in the said plate located between the said aperture and the said disk and in the immediate vicinity of the said disk, and a tying cord adapted to be fastened by one end in the said hole, so that the said plate can be held in contact with one surface of a package by the thumb of one hand while the said cord is passed cross-wise about the package and anchored beneath the said disk by the other hand without in any way interfering with the holding of the plate, and without causing any tendency for the plate to rotate during the wrapping and more particularly during the tightening of the cord about the package.

2. A device as claimed in claim 1, in which the said hole lies substantially at the point of intersection of two straight lines the one of which is a tangent common to the said thumb-aperture and to the said clamping-disk, and the second of which is the tangent to the said disk which is at right angles to the said first tangent, the said second tangent being substantially coincident with the first lap of the cord in the tying operation.

3. A device as claimed in claim 1, in which the space between the plate and the disk is slightly greater than the diameter of the cord so that upon wrapping of the cord the latter, on being crossed upon itself within the said space, is jammed and thereby anchored in position.

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