This invention relates to shock tyers of the type for assisting in the tying of bulky fodder or cane and like material after the same has been severed from the stump preparatory to be left standing in spaced shocks for drying, or until subsequently carried away or otherwise disposed of. One object of the invention is to provide a simply constructed device that is easily operated by one person, i.e. fool proof in service, and is secure in performing its function.

Another object of the invention is to provide an implement adaptable for compressing or compacting a bundle of loose stalks, or the like preparatory to tying with a permanent tie string or thong, and then usable for severing the supply of tying string from the tied bundle or shock.

Another object of the invention is to provide a fixture of simple construction provided with means for temporarily securing a compressing strand affixed thereto while a tying string is secured in place.

Yet another object of the invention is to provide a fixture for holding a bundle of loose material compactly until a tying string is adjusted in place and tied, with means for securing one end of the loose end of a tying string until the string is adjusted in place, with additional means for severing the supply of tying string.

Still another object of the invention is to provide a device for holding a bundle of loose stalks or the like compressed for tying, that has a concealed knife for severing the supply of tying string.

Further objects and advantages of the present invention will be apparent from the following description reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

Fig. 1 is a perspective view of the improved shock tying device showing the relative relation of the characterizing appointments.

Fig. 2 is a detail view in longitudinal section, substantially as indicated by the line and arrows 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view through the string holding and severing notch, substantially as indicated by the line and arrows 3—3 of Fig. 1.

Fig. 4 is an elevational view of a shock of material compacted by the improved device and a tie string in place ready for tying the shock of material.

Fig. 5 is a similar view with the tying fixture removed or released, and the shock held in place by the tie string, the implement being shown in position to cut the tying string.

Fig. 6 is a view partly in plan and partly in section through a portion of a bound shock illustrating a step in the process of binding, and the principal means of locking the binding rope while the bundle of material is being held compacted for final tying, the view being indicated by the line and arrows 6—6 of Fig. 4.

When harvesting rank growing crops, particularly such as corn, hemp, cane and the like, much difficulty is had in tying the shocks after the separate bundles have been stacked in a convenient sized shock. Many devices have been developed that are said to assist in that difficult task. There is need of some simple device that will make it easy and speedy to gather the tops of the bundles into a small group, and compact them firmly into such sized mass that the minimum of tying string is needed to secure and hold the entire mass of stalks upright for a long time. There is also need for holding one end of the binding string while it is being adjusted around the compacted mass of stalks preparatory to tying in final position, and for severing the string supply close to the tied knot after the tying string has been secured. While many devices have been developed to assist in these needs and procedures, none of them are capable of accomplishing the full range of requirements, and all of them are vitally defective in performing their contributions efficiently and easily. For the most part they are all complicated in construction, difficult to build and to operate, and expensive to build and purchase.

The improved device hereof comprises a total of no more than four separate parts, including a stick or bar to which is attached a compressing rope adapted to be inserted in a lateral notch or take-up slot in the holding step, and a concealed knife or blade for severing the tying string. The device, exclusive of the attached rope, is shown in Fig. 1 where 12 represents a wooden bar of clear and firm stock, square in section, and having a central cross bore 12 therethrough which ends on what may be called the front side 14 in an enlargement or countersink 16. A compressing or compacting rope 18 is threaded through the cross bore 12 from the opposite side of the countersink 16 and is knotted at 20 so that it will not pull back through the cross bore but will be so securely recessed within the countersink that it will not catch upon any of the stalks or clothing.

From what may be termed the bottom face 19 of the bar as shown in Fig. 3, there is extended a transverse arcuate notch or take-up slot 22 that ends at 24 on the longitudinal axis of the bar to be disposed in what may be termed the handle,
The arcuate notch 22 is of such magnitude throughout that the compacting rope 18 may easily slide therethrough transverse to the bar as well as move along the arc from the opening to the bottom without undue friction. The opposite end 30 of the bar may be termed the holding end and embraces a diverging notch 32 entering at 34 from the front face 14 and curving rapidly at 36 to align with the axis of the bar and the face cut along the tapering groove to end 38. Extending from the back face 40 of the bar along the middle thereof is a blade element 42. The blade is arranged lengthwise of the bar and extends far enough therethrough to form a chord across the are 35 of the holding groove 33. One particular form of blade is shown in Fig. 2 and comprises a triangular blank of sheet steel sharpened at 44 to provide a cutting edge, thereby being adapted for insertion in a saw kerf extending from the back side of the bar. The blade element 42 has a notch in the side opposite the cutting edge 44 so that the kef of the bar is partially unfilled where the kef and notch coincide. A screw device 46 threaded into the bar as the coincidence of the kef and notch impinges against the back of the blade at the bottom of the blade notch to secure the blade in place, substantially as shown in Figs. 2 and 3. It should be observed, as is clearly shown in Fig. 2, that the edge 44 of the blade when seated properly in the body of the bar is spaced from the bounding portion 43 of the groove 33 so that a tension string may be passed by the edge of the blade 42 to the narrow portion of the groove without being cut, and so as to be secured in the narrow taper of the notch near 38.

The bar 10 has a clean exterior with no prominent protuberances or projections that might catch upon the stalks, clothing or person and injure an operator. The string cutting blade 42 is so well recessed and covered within the groove 32 that it cannot injure the clothing or person when handled even carelessly. Likewise the concealed knife is protected against nicking or dulling by coming in contact with stones and the like. The bar 10 being of straight wood stock, square in cross section, is easily fabricated from hard wood stock by rip-saw, brace and bit, and scroll saw. A completed device with compressing rope 18 attached is light in weight and easily transported about the field and worked with all day without expending unnecessary energy. There are no relatively moving parts to become fogged and clogged by bits of fodder and the like or to wear out and necessitate replacement or repair beyond the sharpening of the blade 42. The rope anchoring hole 12 and makeup slot 22 are so located that the nose or handle portion 26 is always pointed slightly away from the shock and the rubber operation which makes it more receptive of the rope end in locking the compactor, so that both hands will be free for the tying operation.

In using the tying device, the operator grasps the compressing rope 18 at a substantial distance from the bar 10 and swings the same, preferably from the right, around the shock of loosely standing stalks or bundles of stalks which causes the rope to wrap around the shock and carry the bar to the front of the operator where he may grasp the bar 10. If it is so desired, the end of a tying string 52 may be crowded into the notch 32 of the bar 10 before it is swung around the shock so that the string need not later be wrapped around. When the operator has the compressing rope around the shock he then hooks the notch 22 of the handle end over the end of the rope 18 and pulls the nose so firmly about the gathered stalks. Preferably that is done by pulling vigorously the free end of the rope 18 either directly away from the shock or on a line tangent to the shock and in the same direction in which the bar 10 moves around the shock. In consequence, the rope 18 slides along the bottom 24 of the notch 32 of the compactor the encompassed stalks as it does so. After the shock has been compressed as tightly as possible, or to the desired amount, the operator merely walks hand over hand on the rope to the shock where the left hand is placed over the block at 14. At the same time the thumb of the left hand is placed against the compressing rope where it comes through the notch 22 at 24 and holds the rope from slipping while the right hand loops the free end of the rope over the end 28 of the bar 10 somewhat as shown in Figs. 4 and 6, where the compressing rope bends sharply upward from the notch 22 to pass over the top face of the bar, and thence downward behind the bar and in front of that portion of the rope compressing the stalks just before the rope enters the notch 22. The locking feature is clearly shown in Fig. 6, where the rope 18 may be pulled to the left surrounds the stalks 52 and reappears at 18a to thread into the notch of the bar 10, wrap over the end of the bar at 18b, and be pinched between the bar 10 and the returning rope 18c at the point 18c.

If the tying string 52 has not been previously secured at one end in the notch 22 before the device is swung around the shock, that is now done so that the supply of tying string may be walked around the firmly compressed shock, or so that both hands and arms are free to reach around the compressed shock for passing the tying string on the back side. Since the improved device is capable of compressing relatively large masses of loose stalks and bundles into a comparatively small and solid mass, it is not always necessary to walk the string around the compressed shock, but the tying string may usually be successfully passed around the compressed shock by a simple hugging act. The operator having both ends of the tying string at hand ties the knot as at 54, the tying string and knotting preferably being done below rather than above the compressing rope and bar, which will be found to simplify cutting off the string supply after the compressing rope has been loosened. It is preferable to loosen the compressing rope before the supply of tying string is severed, because when the bundle of stalks 53 are tightly compressed the stored up energy of the compression or compacting may be great enough when released against the tied string 52 to break it at some point. That frequently occurs if a string of insufficient strength is used, or if certain types of knots 54 are used. It is preferred that the usual and well known square knot be used in tying the string 52. If the tying string does break, or if the knot pulls out upon release of the compressing rope then the string supply is still available to provide the necessary amount available for retying, and the supply of tying string is already threaded around the shock for retying without the necessity of again walking the string around the shock.

To release the compacting rope the operator grasps with his right hand the dangling end 18d and unwind the bight 18b and 18c from over the end of the bar 10 while he holds taut in his left
hand the string supply 55. He lets up gradually on the rope end 18d so that it slowly slides back through the notch 22 until the compressed stalks 53 fill out against the tying string 52. If the tied string does not part he drops the rope end 18d and grasps the handle end 28 of the bar with the right hand, and the string supply with the left hand at the same time giving the bar 10 a 90 degree roll while pulling that end away from the shock 56 by pivoting the bar 10 about the end 30. The manipulation of the bar 10 places the face 14 of the bar along the portion 30 in connecting with the portion 54 in the same time withdrawing the rope 18 from the notch 22 allowing it to drop free of the bar against the base of the shock as shown in Fig. 5. All is now in position for severing the string supply and going on to the next shock. With the parts in the relation shown in Fig. 5 where the operator holds the bar in his right hand and the string supply 55 under tension in his left hand, he presses the bar 10 downward against the string and moves the bar to the left until the string supply 55 drops into the opening 34 of the notch 30. A reverse movement accompanied with downward pressure will sever the supply of tying string. Then with the bar 10 still in his right hand the operator walks around the left side of the tied shock thereby pulling the free end of the rope 18d from around the right side. As he walks to the next shock, which will probably be no more than a few feet distant, the operator can pre-position the rope 18 to suffice in swinging the device around the next shock. However, removal of the tyer may be accomplished if desired, by forcefully swinging or throwing the bar 10 toward the left so that the rope will unwind from around the shock 56 that the operator may pick up the dangling end 18d and walk away from the tied shock thereby pulling bar and rope free. The operator thereby also has a proper position on the rope 18 to suffice in swinging the device around the next shock.

While the improved device is of paramount importance and efficiency in the tying of loosely standing shocks of stalk material, it is also efficient for use in tying bundles of stalk material and unwieldy brush when piled upon the ground. For use in that capacity, the bar 10 with its attached rope is stretched out on the ground with the tying string attached and laying along side the rope 18. The stalks or brush material is then piled on top of the rope at a point spaced from the bar 10 until the desired amount of material is there collected. The bar 10 and loose end of the rope 18 are then brought together on the top of the bundle or pile and the two locked as has been herefore described, and substantially as shown in Figs. 4 and 6. Following tying of the string 52 the compressing rope may be released and withdrawn by pulling the rope out from under the tied bundle. The device also serves efficiently in other capacities, such as a temporary binder for bulky material, such as needed by garden or estate attendants, and house painters, inasmuch as the device may be used to temporarily bind a bundle of brush or other coarse material while the same is being transported from the site of initial cutting to the trash pile or point of pickup. Painters find the device useful in gathering in and holding the branches and limbs of standing shrubbery near the foundation of a building 60 so that ladders or persons may be positioned advantageously. Thus, without limitation as to the uses the improved device may be put to, the sub-tended claims describing a shock tying device are intended to be broad enough to cover the structure defined for any of the equivalent uses. It should therefor be understood that the invention is not limited to the specific embodiment herein illustrated and described but may be used in other ways without departing from its spirit as defined by the following claims.

What is claimed is as follows:

1. A tyer of the class described, comprising in combination, a bar of square cross section having a rope receiving bore therethrough at its mid-length, a take-up slot entering from the bottom side of the bar and curving toward the end of the bar away from the rope receiving bore, and a string securing slot opening from the front of the bar on the side of the rope receiving bore opposite to the take-up slot and extending away from the said bore; and a string cutting element extending lengthwise of the bar and projecting into said string securing slot in such manner that a string may be passed to the closed end of the slot without engaging the cutting element.

2. A tyer of the class described, comprising in combination, a bar of square cross section having a counterbore hole extending therethrough from a front face to a back face and located at mid-length of the bar for anchoring a compressing rope, said bar also having a rope take-up slot near one end of the bar comprising an arcuate notch extending across the bar and entering from the bottom face thereof and curving away from said rope anchoring counterbore hole to end in substantial parallelism with said counterbore hole, and tie-string holding and securing means situated on the opposite end of said bar.

3. A tyer of the class described, comprising in combination, a bar of square stock having a front face with a rope anchoring bore opening therefrom at its mid-length, said bar being provided with a rope take-up slot near one end thereof, and having an open ended string holding slot near the other end of the bar; and a string cutting blade anchored in the open end of the string holding slot.

4. The combination set forth in claim 3 wherein the string holding slot in said bar opens from the front face of the bar and then curves sharply to progress away from the rope anchoring bore along the longitudinal axis of the bar and decreases in width until it ends in a line at a position removed from the rope anchoring bore.

5. The combination set forth in claim 3 wherein the string holding slot in said bar opens from the front face of the bar and curves abruptly to extend along the longitudinal axis thereof with the walls of said slot converging to meet at a line near the end of the bar, and wherein the cutting blade is situated in the body of the bar and extends as a chord across the inner wall of the abruptly curved portion of the slot but stops short of the outer wall of the curved portion so that a string may be passed to the end of the slot where said converging walls meet without being cut.

6. A tyer of the class described, comprising in combination, a rigid bar of square stock having a rope anchoring bore at the mid-length thereof extending from the front face to the rear face thereof, said bar having a rope take-up slot near one end of the bar entering from the bottom face thereof, and a compressing rope anchored in said bore and having a free end adapted to pass into and slide within the take-up slot for com-
pressing a group of stalk elements and to be locked in compacting relation by looping said free end of the rope up and over the end of the bar and binding it between the rear face of the bar and the run of compressing rope running to the take-up slot, said bar having a string holding slot with a string cutting blade therein situated near the other end of the bar and opening from the front face thereof for holding the end of a tie string while the compressing rope is being adjusted around the group of stalk elements and being locked in compacted relation, said bar being adapted to roll forward through substantially a right angle and be reciprocated for severing the tie string, when the tie is made and the compacting rope is released.

7. A tyer of the class described, comprising in combination, a bar of square stock having a compressing rope anchored at one end to the middle of the bar separating the same into a handle end and a holding end; said bar having a take-up slot in the handle end thereof opening from the bottom face of the bar and curving away from the anchored end of the rope, a tapered slot situated along the longitudinal axis of the holding end of the bar and decreasing in width as the slot progresses away from the anchored end of the rope, and an opening across the front face of the bar curving to join the wide end of the tapered slot; and a knife blade secured in the body of the bar and extending across the curve of the opening joining the tapered slot so that part of the bar extends over and protects the edge of the knife blade.

CECIL A. PALMER, Executor of the Estate of Chester Arthur Palmer, Deceased.

REFERENCES CITED

The following references are of record in the file of this patent:

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