

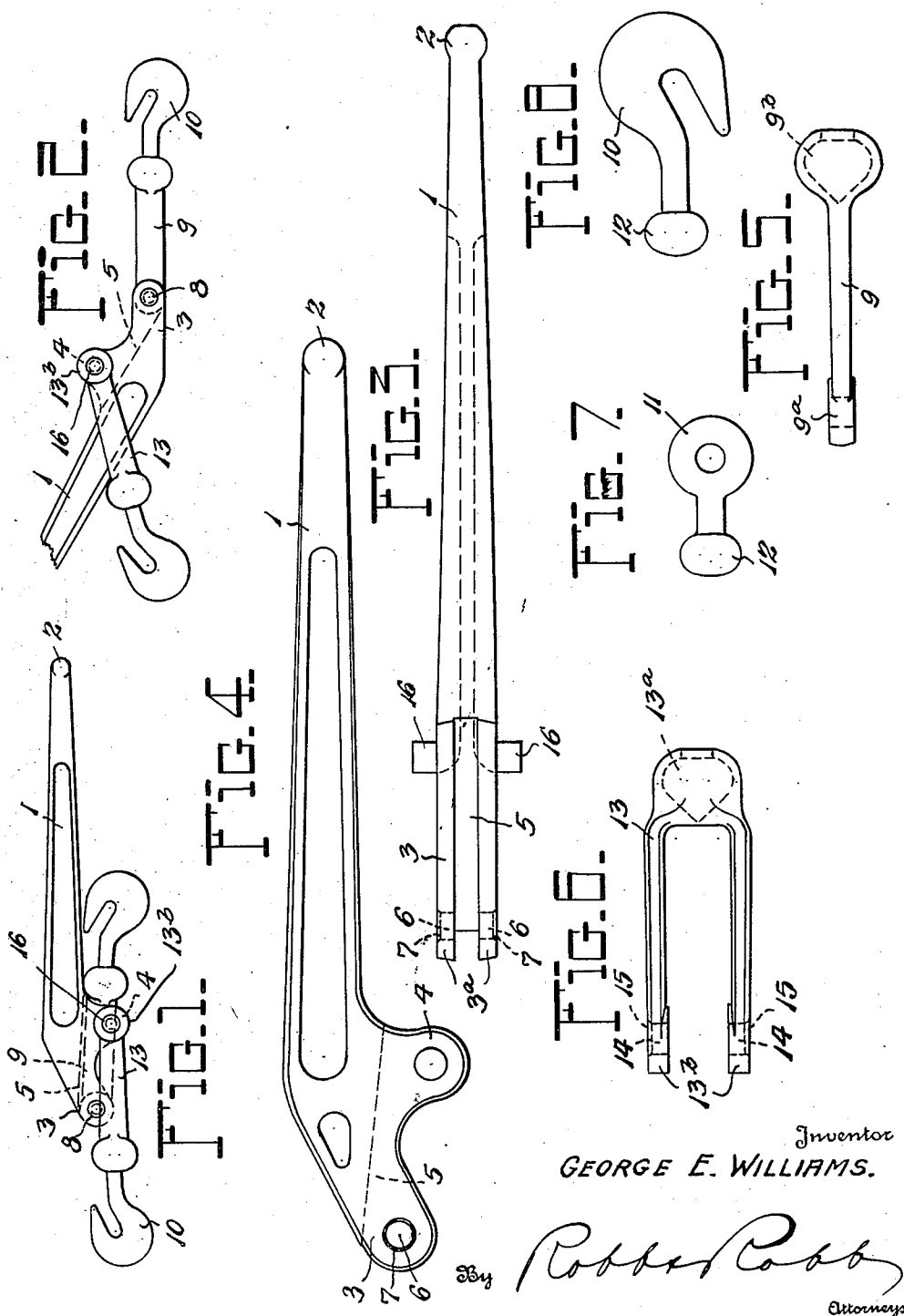
Aug. 10, 1937.

G. E. WILLIAMS

2,089,679

BOOMER OR LOAD BINDER

Filed Nov. 30, 1936



UNITED STATES PATENT OFFICE

2,089,679

BOOMER OR LOAD BINDER

George E. Williams, Alliance, Ohio

Application November 30, 1936, Serial No. 113,517

2 Claims. (Cl. 254-78)

The present invention involves an improved pulling or tightening tool of the class known in the commercial art to which the invention particularly relates, as a boomer or load binder. These tools are quite generally used for the securing of heavy loads such as logs, pipes, or the like, to vehicles while in transit. The device of the invention, however, is not limited to the above special use, because the principle of its construction admits of employing the same for stretching wire, pulling stumps, or like uses, in addition to the employment of the invention for the tightening or pulling together of a binder such as a chain, cable, or the like, by taking up the slack therein.

The primary object in the design of the tool hereinafter set forth has been to produce a construction of greater strength and ruggedness than similar tools heretofore devised, the structures of many of which are such that when subjected to the lever action of the lever arm or handle comprising a part of the device, breakage or pulling apart of the members of the tool results. Having in view that the breakage of a load binder or tension taking up device of the nature of the invention may cause the load or parts secured thereby to become displaced, and possible loss of life as a result, the importance of great strength in this type of tool is self-evident.

Still another object of the present invention has been to so form the lever member or handle of the device as to prevent foreign substances such as stones, ice, or the like, which might jam in the recessed or slotted portion of the lever, from entering such portion and interfering with the proper functioning of the device.

Still another objective in the design of tool of my invention has been to form the toe or pivot connection end of the tool in such a manner as to prevent the protrusion of the latter from the adjacent connected parts when the device is in its locked or binding condition, so that accidental striking or engagement with this portion of the lever member will not tend to throw the lever member outward toward an unlocking position, which action might result in accidental release of a load.

Supplemental to the foregoing, a further object of the invention is to provide a simplified tool of the nature referred to in reference to the form of its various parts, as will be more fully presented in the following description, in conjunction with the annexed drawing, in which—

Figure 1 is a side elevation of a tool embodying

the invention with the parts in their operating or binding tightened condition.

Figure 2 is a view similar to Figure 1, illustrating the various parts of the boomer in released or unlocked position, so to speak.

Figure 3 is a bottom plan view of the lever member or handle, looking from what may be characterized as the outside or bottom thereof, when this lever member is in its operative locking position.

Figure 4 is a side elevation of the lever member of the boomer.

Figure 5 is a view in elevation of the swivel link showing in dotted lines the socket end for receiving a swivelled eye or hook member as commonly connected with this part.

Figure 6 is a plan view of the swivel clevis showing the spaced side formation, socket formation, and pivotal ends formation thereof.

Figures 7 and 8 are, respectively, side views of a swivel eye member and a swivel hook member such as may be used in cooperation with either or both the swivel clevis or swivel link, previously referred to.

Referring first to Figures 1 and 2 of the drawing, the general assembly of parts of my boomer member is seen to comprise the lever member or handle 1 tapering toward its ball end 2 and comprising, as seen in Figures 3 and 4 what I call the toe 3 located at the opposite end which extends at a slight angle from the body of the lever member 1. Intermediate the ends of the lever member 1 but proximate to the toe 3 is the heel of said member 1 designated 4. On the inner side of the lever member 1 and extending approximately, as seen in Figure 4, from a point outwardly of the toe 3 to a point outwardly of the heel 4, is the recess 5, the purpose of which will appear more fully hereinafter. The lever member 1 and other parts of the device of the invention are preferably made from heat treated drop forgings, and the cross section of the handle or lever member 1 is that of an I beam to afford desired strength for this part.

The formation of the lever member 1 by means of the recess 5 is a specially important feature of the invention in obtaining the desired strength of the actuating arrangement of the tool. Customarily the lever members functioning similarly to the member 1 are slotted from the pivot connection end portion corresponding to the end or toe 3 for a considerable distance from the toe as above described. Such slotted or bifurcated constructions create weakness, desired to be avoided according to this invention, hence the use

of the closed recess structure designated 5 as above set forth. Moreover, this closed recess structure, as will be seen upon reference to Figure 1, is located at the inner side of the end portion of the member 1 where it is formed, and since the portion of the member 1 exterior thereto or outward thereof is solid, not only is strength gained, but such formation prevents entrance of ice, snow, stones, or other foreign matter that might prevent the proper operation of the invention.

The side portions of the toe 3 of the member 1 are formed with pivot openings 6 which are countersunk at their outer ends as shown at 15 7, the same to receive a pivot pin 8 by which the swivel link 9 is attached to the lever member 1. Said side portions of the toe 3 at the recess 5 extend slightly beyond the end of said recess 5 as seen at 3a so that the pivot end 9a of the swivel link 9 may have proper pivotal mounting and range of movement relatively to the lever member 1. The link 9, while preferably a swivel link equipped with the ball socket end 9b, may be constructed with an end portion in substitution for that designated 9b providing a simple pivotal connection with another part. However, it is customary for load binding purposes to avail of a swivel member attached to the link 9 and hence the provision just referred to. Such a member is the hook 10 shown in Figure 8 or the eye member 11 shown in Figure 7, each of which is equipped with a ball end 12 for reception by the socket 9b of the swivel link 9.

Effectively speaking, the formation of the toe 3 provides a yoke to receive the pivot end 9a of the swivel link or equivalent connecting part 9. Likewise, the formation of the heel 4 of the lever member 1 affords a yoke structure between the sides of which the link 9 may swing, and to which at the outer sides of the yoke thereof are connected the sides of the swivel clevis member 13, seen best in Figure 6. The swivel clevis member is formed with a ball socket 13a at one end and comprises spaced sides having the pivot ends 13b which are pivotally connected with the sides of the yoke that forms the heel 4 as above described. Pivot openings 14 are formed in the pivot ends 13b of the swivel clevis 13 and the outer ends of said openings are countersunk as seen at 15.

The pivot openings 14 are designed to receive the trunnion lugs 16 one of which extends outwardly from each side of the yoke forming the heel 4.

When the parts of the invention are assembled as shown in Figures 1 and 2, the ends of the pivot pin 8 which affords the pivotal connection of the link 9 with the toe 3 of the member 1, are upset or riveted so as to lie within the countersinks 7 and be flush with the outer sides of said toe 3. Similarly, when the swivel clevis 13 is connected with the heel 4 the outer ends of the trunnion lugs 16 are upset or riveted so as to be received in the countersinks 15 of the pivot openings 14 and be flush with the outer surfaces of the sides of said clevis. It is notable also, when the parts are assembled, that the swivel link 9 is free to swing in the space of the recess 5 of the member 1 and said link is also adapted to swing freely between the sides of the clevis 13, which sides are sufficiently spaced that the end portion of the member 1, including the toe, heel, and a part of the body of the member adjacent to the heel, may pass through and swing freely between the sides of the clevis as

when the parts assume the condition illustrated in Figure 2.

To operate the boomer or load binder of the invention in one of the ordinary uses thereof, a chain or cable may be wrapped around the object or objects and another object to which they may be bound. Assuming that the members 9 and 13 are equipped with swivel hooks, the hook at the end of the swivel link is passed over a link in the chain between two of the adjacent links. Or, such hook might be engaged with a point at the end of the cable. Then the tool, with the parts arranged so that the hooks are at the greatest distance apart, will be manipulated so that the other hook at the end of the swivel clevis 13 is slipped over another link at the other end of the chain or any predetermined distance from such end, or the said last mentioned hook may be engaged with the point at the other end of the said cable. Thereupon, the lever member is then pulled toward the operator until it is closed or in locked position, and this action causes the center line of the toe of the device to become elevated above the center-line of the heel, until the ball or socket end of the swivel link rests against the underside of the lever member 1. The center-line of the toe 3 is above the center-line of the heel in relation to the longitudinal axis of the lever arm. As the toe rises above the heel, a camming action results, and the tension of the load on the chain or cable tends to pull the toe 3 over the heel 4, and, because of the swivel link 9 cannot rise above the predetermined distance of an arc described while swinging on the pivot pin 8. This distance is determined by the ball section of the swivel link 9 engaging in contact with the underside of the lever member 1 providing the locked position required to hold the chain or tensioned member in tension against the surfaces of the objects that are bound together as well as to the parts to which the objects are bound.

As seen in Figure 1, when the lever member 1 is in locked position the toe 3 slants inwardly and this is advantageous since there is no likelihood that it may be struck so as to accidentally displace this member 1 from said position.

The sides of the clevis member 13 are so connected to the yoke forming the heel 4 that there is no tendency for said sides to spread incident to the pull or load thereon when the tool is under tension in locking condition of the parts. The parts 3a are so short and so reinforced by the adjacent body metal of the lever member 1 that there is thus provided a very strong pivotal connecting structure for the link 9.

The members 10 and 11 are connecting members and may be substituted by other equivalent parts to coact with a particular kind of binder such as a chain, cable, or the like.

When in effective locking position the lever member 1 lies in substantial parallelism with the pulling members 9 and 13 connected therewith.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is—

1. In a boomer, in combination, a lever member forming a handle at one end and provided at its opposite end with a toe, the outer extremity of which has a short bifurcated portion apertured to receive a pivot pin, said toe being curved inwardly from the body to extend laterally of the longitudinal axis of the lever member which is formed also with a heel projecting inwardly from the lever member to extend

laterally of the longitudinal axis of said lever member and spaced a short distance from the toe, the inner side of the lever member having a recess formed therein extending from the toe bifurcation through the heel so that the metal of the body of the lever member closes the recess at its outer side and reinforces the heel and toe parts against separating action, at the same time closing the end of the lever member at the toe and heel portions against entrance of foreign matter, while said recess forms the heel into a yoke having spaced sides, the last named sides having each an outstanding trunnion member, a clevis comprising spaced sides pivotally connected to the heel by said trunnion members, a pull link pivoted to the toe of the lever member at the bifurcation thereof and having its body adapted to be received in said recess, the sides of the clevis being spaced sufficiently for the toe and adjacent portion of the lever member to swing therebetween on unlock-

ing movement of said member, and connecting members for a load binding, or like element, attached to the said clevis and pull link parts at their ends remote from the points of connection to the lever member.

2. A boomer device of the class described, comprising a handle lever having a bifurcated toe and heel extension projecting laterally of the axis of the handle in the same direction and at one side of said axis, a pull link pivotally connected to the toe in the bifurcation, said pivotal connection constituting a relatively stationary fulcrum for the lever and a bifurcated second pull link connected to the heel so as to straddle the handle when the boomer is in unlocked position, said heel connection being swingable about the toe connection by the handle to a point beyond the axis of the first pull link to establish locked position.

GEORGE E. WILLIAMS. 20