

June 4, 1929.

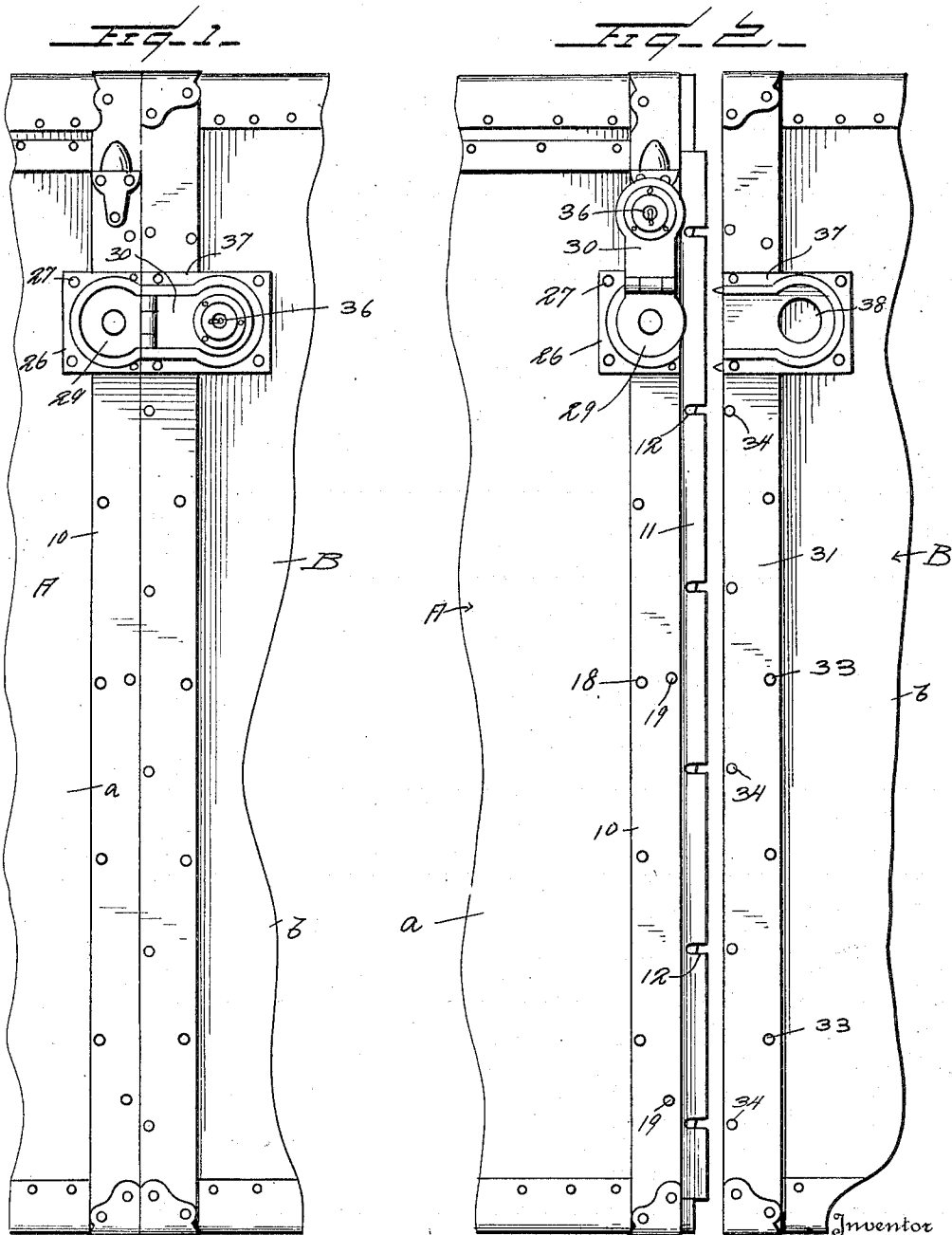
A. T. LONG

1,715,558

TRUNK LOCK

Filed Aug. 2, 1928

2 Sheets-Sheet 1



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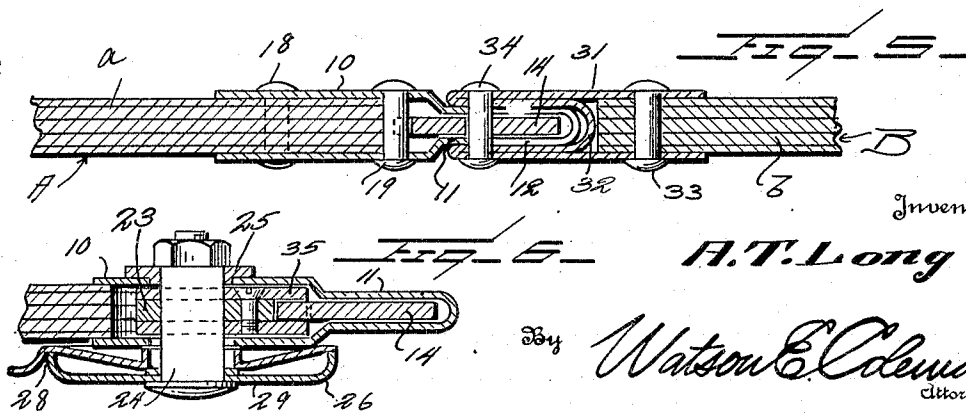
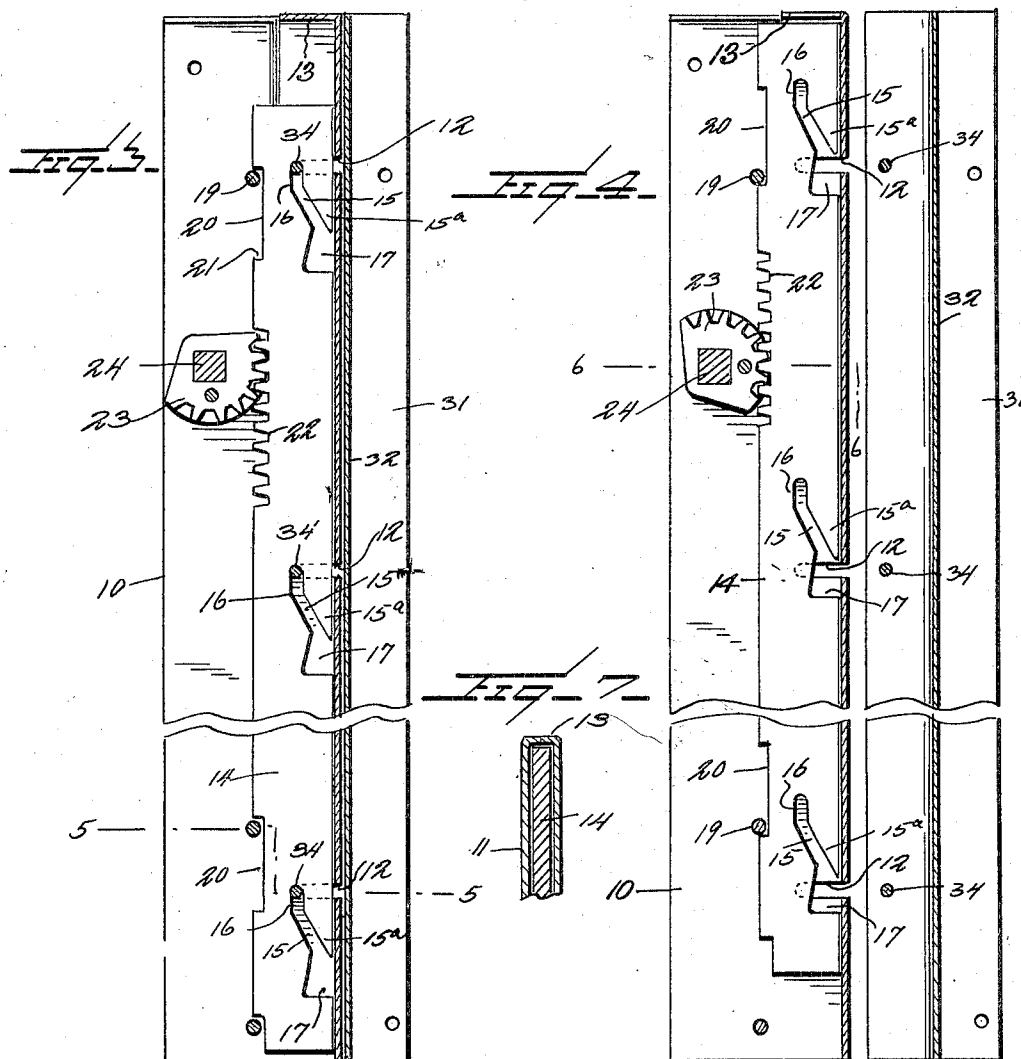
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UNITED STATES PATENT OFFICE.

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TRUNK LOCK.

Application filed August 2, 1928. Serial No. 296,989.

This invention relates to locking mechanisms for trunks, suit-cases and like receptacles in which two sections, usually hinged on one side are to be locked to each other and particularly to locking mechanisms of this class wherein there is provided a rectilinearly movable locking bolt or bar which in one position engages with complementary locking members upon the opposite section of the trunk, the locking bar being moved to a locking position by a hasp when the hasp is moved to a locking position.

One of the objects of the present invention is to provide an improved locking mechanism of this character in which the locking bolt or bar is mounted within the channel member which constitutes one margin of one section of the trunk, the locking bar thus being firmly supported and guided in its rectilinear movement without any chance of the locking bar becoming dented or deformed or otherwise prevented from operation, such mounting supporting the locking bar against pull which would draw it out of alinement with the complementary locking devices on the other section and relieving all strain upon the lock of the hasp.

A still further object is to provide on one section of the trunk a channel bar which fits over and is riveted to the margin of the section and which contains and guides the locking bar and provide a channel section on the margin of the opposite section of the trunk which will snugly receive the first named channel bar, the first named channel element being hollow to receive a locking bar but acting as a tongue when inserted in the groove of the channel on the second named section, so that both sections of the trunk, when the trunk is locked, will be held from any deformation and will be held in alinement, thus doing away with the necessity of using lugs for this purpose and absolutely preventing any warping of the trunk.

A further object and a very important one is to provide a locking attachment which may be made up as a unit and which comprises the two channel bars with the locking bar and the hasp mounted permanently upon one of the channel bars so that these two channel bars may be readily applied to the bodies of trunks by ordinary workmen without the necessity of peculiarly constructing the trunk initially, and another object in this connection is to provide means whereby ordinary workmen may force these channel members

upon the margins of the trunk sections with certainty that they will be disposed in proper position, or in other words, to provide stops on these channel sections engageable with the edges of the trunk sections, limiting the inward movement of the channel members and thus doing away with the necessity of exact measurements and adjustments on the part of the workmen in placing these attachments on the trunk.

A further object, as before stated is to provide means whereby the locking bar may be shifted longitudinally by the rotation of the hasp and provide a rack and pinion connection between the axis of the hasp and the locking bar and by attaching the hasp to one of the channel members, to set the pinion close to the locking bar, thus making the device very compact and securing a positive engagement between the pinion and rack on the locking bar.

Another object in this connection is to so construct the pinion that the margin of the locking bar will always be received within a recess in the face of the pinion, thus preventing any disalinement between the rack on the locking bar and the pinion and keeping the pinion always in mesh.

Another object is to so dispose rivets through the channel member enclosing the locking bar that these rivets shall act as stops limiting the insertion of the margin of the trunk into the channel member as heretofore stated, and also provide stops limiting the movement of the locking bar and holding the locking bar in place.

Another object is to provide the female channel member which receives the tongue on the opposite channel member with a plurality of transversely extending rivets which are disposed relatively close to each other and form the locking bar with diagonally extending cam slots intersecting transversely extending slots on the channel member, these transversely extending slots in turn being adapted to receive the rivets on the female channel member, so that these rivets will always be held in proper alinement with the slots in the male channel member and always in position to be engaged by the locking bar.

Another object is to so form the inclined slots in the locking bar so that they will act to draw the two sections of the trunk positively together when the locking bar is shifted to a locking position and also act to force the two sections of the trunk apart when the

locking bar is shifted toward and from its unlocked position.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings wherein—

Figure 1 is an elevation of a portion of a wardrobe trunk showing the meeting edges of the two sections of the trunk and with these two sections locked together.

Figure 2 is a like view to Fig. 1 showing the sections unlocked and separated.

Figure 3 is a vertical longitudinal section through two channel members showing the locking bar in its locked position.

Figure 4 is a like view to Fig. 3 showing the two members in unlocked position;

Figure 5 is a section on the line 5—5 of Fig. 3;

Figure 6 is a section on the line 6—6 of Fig. 4;

Figure 7 is a fragmentary vertical section through a locking bar and sheath, the section being taken through the top end of the sheath and locking bar shown in Figure 4.

In Figs. 1 and 2, I have illustrated fragmentary face views of a wardrobe trunk, the sections being designated A and B, respectively. It will be understood that these sections may be of any suitable character and each section is formed with a front wall designated *a* and *b* respectively.

As shown in Fig. 5 the front panel *a* of one section is enclosed within a sheath formed of a channel member designated generally 10. This channel member at its open edge is wide enough to embrace the margin of the panel *a* and then beyond the edge of this panel is contracted in width as at 11, so as to form a tongue as it may be termed. This tongue 11 as shown in Fig. 2 is longitudinally slitted at a plurality of points as at 12. Both ends of the channel member 10 are closed as shown in Fig. 7 at 13 by bending the material of the channel member over at the ends.

Disposed within, and snugly fitting in the hollow tongue 11 is the longitudinally extending locking bar or bolt 14 made of relatively heavy metal and being shorter than the length of the hollow tongue 11 so that it may be reciprocated therein. The locking bar 14, as illustrated in Figs. 3 and 4 is formed at intervals with upwardly and inwardly inclined slots 15 which, at their upper ends extend parallel to the edge of the locking bar as at 16. These slots, each at its lower end, widens out to form a relatively large mouth 17, and these slots are so disposed that they intersect the inwardly extending slots 12 formed in the tongue 11.

The channel member 10 is supported upon the margin *a* by means of a plurality of rivets 18 which are disposed adjacent the inner margin of the channel member and also extending across the channel member are a

plurality of rivets 19. These bear against the edge of the panel *a* and also bear against the edge of the locking bar 14. This locking bar as shown in Figs. 3 and 4 is formed on its rear edge with a plurality of longitudinally elongated recesses 20 and the rivets 19 are disposed to intersect said recesses. The shoulders 21 at the ends of the recesses act as stops when they engage with the rivets 19 and thus the rivets 19 hold the locking bar firmly in place against the front edge of the tongue and also act to limit the rectilinear movement of the locking bar.

The rear edge of the locking bar is formed with rack teeth 22 and coacting with these rack teeth is a sector-gear or pinion 23 mounted upon a square shank 24. This shank at its upper end passes through a washer 25 which fits within an aperture formed in the inner wall of the channel member 10 as shown in Fig. 6. The outer end of the shank 24 passes through a face plate 26 which is riveted, welded, or otherwise attached to the outer wall of the channel member 10 as shown in Fig. 6, this plate, as shown in Fig. 2 extending beyond the channel member and being riveted at 27 to the panel *a*. This plate has a depressed portion 28 for the reception of a concavo-convex base plate 29 to which the hasp 30 is hinged.

This base plate rotates upon the plate 26 and as the hasp is rotated from the position shown in Fig. 1 to that shown in Fig. 2, or vice versa, the shaft 24 is rotated, thus oscillating the pinion 23 and shifting the locking bolt in one direction or the other.

The opposite margin of the panel *b* is also enclosed within a channel member 31, which, as shown in Fig. 5 is formed from one sheet of metal bent upon itself to provide an inwardly extending recess or socket 32. By bending the metal in this manner the socket 32 constitutes a stop limiting the inward movement of the channel member 31 upon the panel *b* and the socket member is formed with two thicknesses of metal constituting each wall of the socket and thus making this portion particularly strong. The channel member is extended rearward of the inner wall of the socket and embraces the margin of the panel *b* and is held thereto by rivets 33. The margin of the panel *b* is, therefore, bound within a sheath of metal which is convoluted so as to provide a socket, the convolutions acting to strengthen the metal sheet. At intervals the socket is intersected by a plurality of transverse rivets 34 which I will hereafter term locking rivets and which are complementary to the slots 15, these slots as it will be seen, defining downwardly projecting tongues or hooks 15^a adapted to engage behind these rivets 34, when the hollow tongue 11 is inserted within the channel 31 and the locking bar is forced downward.

It will be noted that the joint between the two sections of the trunk along the entire front of the trunk is formed of six thicknesses of metal, and that this joint is further strengthened by the locking bar 14 which snugly fits within the hollow tongue. Thus this joint is rendered particularly strong against any possible deformation due to "baggage smashing", or mishandling and held against any possible warping. It is when the trunk is closed that it is submitted to the most violent handling and at this time the joint is formed by the six thicknesses of metal previously referred to, and the locking bar, and these parts are further strengthened against deformation by the rivets 34 which hold the two walls of the socket or channel from any accidental spreading and assist to hold all the thicknesses of the metal together as though the locking bar were not removable. At the same time the locking bar and the tongue 31 act to hold the two walls of the channel or socket member from any collapse. Thus the trunk is rendered particularly strong at a portion of the trunk which is ordinarily very weak, that is, at the junction of its front panels.

As seen in Fig. 6, the segmental pinion 23 has disposed on each side of it the plates 35, these plates extending out to the extremities of the teeth of the pinion and therefore overlapping the inner edge of the rack teeth 21, so that the rack teeth 21 are held in mesh with the pinion at all times and cannot possibly get out of engagement with the pinion under any usual condition of use.

The hasp 30 carries upon it, of course, the usual key operated lock designated generally 36. The opposite section B of the trunk carries attached to the channel member 31 the plate 37 of common and usual construction having a recess or keeper opening 38 within which the inner end of the lock casing is received in the usual and ordinary manner. The hasp and the keeper are of any ordinary and usual construction and require no description therefore.

In locking the trunk the two sections are brought together until the rivets 34 are disposed within the slots 12. These rivets need not be forced home within these slots because this full inward movement of the rivets or keepers 34 is secured by shifting the locking bar 14 downward from the position shown in Fig. 4 to that shown in Fig. 3. This downward movement causes the inner inclined edges of the tongues 15^a to bear against these rivets or keepers 34 and cam them inward until they enter the straight portions 16 of the slots 15. A further downward movement of the locking bars brings the locking bar to the position shown in Fig. 3 and fully closes the trunk, bringing the two sections into the position shown in Fig. 1 and the tongue 11 into its fully in-

serted position within the socket 32. At this time the hasp has been rotated opposite to the keeper plate 37 and the hasp may then be swung inward on its hinge and locked in the usual manner. When so locked no pulling strain or strain of any character comes either upon the hasp or the lock. There is no strain which can by any possibility turn the hasp or tend to turn it, and the lock 36 therefore is only necessary to hold the hasp closed.

Obviously, the hasp acts as a handle having a considerable leverage whereby to operate the locking bar and inasmuch as the locking bar has a wedging action as regards the action of the tongues 15^a upon the pins or rivets 34 it follows that great force will be exerted at intervals along the entire length of the trunk to draw the two sections of the trunk positively together, so that no great exertion is needed to close and lock the trunk even when the trunk is very full.

When the trunk is being unlocked and the hasp is thrown from the position shown in Fig. 1 to that shown in Fig. 2, the locking bar moves upward and the inner edge of the slot 15 acts to force the two sections of the trunk apart by bearing at a plurality of points against the transverse keeper rivets or pins 34, thus the trunk cannot bind when it is closed and may be readily opened with the exertion of only a minimum of force.

It is intended that the channel members 10 and 31 shall be put out as articles of manufacture and sold to trunk makers for application to the bodies of trunks. The lock structure is, of course, attached to the channel members and under these circumstances the rivets 19 for the channel section 10 play an important part, not only in holding the channel section in proper form and preventing any detachment of the locking bar after it has been inserted within the hollow tongue, but by acting as stops limiting the inward movement of the channel member 10 upon the panel *a*.

Thus an unskilled workman may simply force the channel onto the panel *a* and when the edge of the panel abuts against the rivets 19, the workman knows that the channel is in proper position for inserting the rivets 18 without the necessity of measuring or gaging. Of course, this margin of the trunk is cut away for the accommodation of the pinion 23, but otherwise than this and the eventual drilling of the holes for the passage of the rivets 18, nothing has to be done to the edge of the channel until after the channel member has been put in place. The channel member 31 is inserted in the same manner over the edge of the panel *b* and in this instance the re-entrant socket 32 constitutes the stop by which the workman knows when the channel member has been fully inserted. He can then insert and flatten the rivets 33 with

surety that this channel member is correctly and truly applied.

The insertion of the tongue 11 into the channel member 31 along the whole length of the front of the trunk not only strengthens this joint, as previously stated, but makes it water and dust-proof, and the fact that the locking mechanism is attached to these channel members and that the channel members are so readily inserted over the edges of the sections *a* and *b*, makes the device practically "fool-proof" for the workman assembling this portion of the trunk.

This invention not only greatly improves the appearance of the trunk but particularly prevents all deformation or warping of the margins of the front panels along the entire extent thereof and severest tests given to trunks having this locking mechanism thereon, tests wherein the trunks were subjected to jars, strains, etc., to which they would never be subjected in use, has demonstrated the fact that such jars and strains will not and cannot act to prevent the easy opening or closing and locking of the trunk.

Attention is called to the fact that the two sections of the trunk are held in engagement with each other against strains which would tend to pull them apart at a very large number of points so that practically the two margins are held in such locking engagement along the entire length in front of the trunk instead of at one, two, or three quite widely separated points.

What I claim is:

1. As an article of manufacture, two complementary channel members adapted to be disposed upon and embracing the respective confronting edges of two trunk sections, and extending longitudinally therealong, both of said channel members having stops inward of their inner edges adapted to abut against the edge of the respective trunk section to thereby from means for gaging the extent to which the channel members may be forced onto said trunk sections, one of said channel members being formed to provide a tongue and the other to provide a socket to receive the tongue the tongue and socket extending the full length of the channel members, and complementary locking elements attached to and carried upon said channel members.

2. In a trunk, the combination with opposed sections having alining walls, of a hollow metallic tongue attached to one of said sections and transversely slotted at intervals, a metallic socket member attached to the other of said sections and extending longitudinally thereof and formed to receive the tongue, the socket member having transversely extending pins at spaced intervals adapted to be received within said slots, and a locking bar disposed within the hollow tongue and having inclined slots defining locking tongues, which when the bar is shifted in one

direction will engage with said pins and draw the tongue into said socket, and manually operable means for shifting the locking bar in the hollow tongue.

3. In a trunk, the combination with opposed sections having alining walls, of a hollow metallic tongue attached to one of said sections and transversely slotted at intervals, a metallic socket member attached to the other of said sections and extending longitudinally thereof and formed to receive the tongue, the socket member having transversely extending pins at spaced intervals adapted to be received within said slots, and a locking bar disposed within the hollow tongue and having inclined slots defining locking tongues, which when the bar is shifted in one direction will engage with said pins and draw the tongue into said socket, and manually operable means for shifting the locking bar in the hollow tongue, the hollow tongue having transversely extending rivets engaging against the back of the locking bar.

4. In a trunk, the combination with opposed sections having alining walls, of a hollow metallic tongue attached to one of said sections and transversely slotted at intervals, a metallic socket member attached to the other of said sections and extending longitudinally thereof and formed to receive the tongue, the socket member having transversely extending pins at spaced intervals adapted to be received within said slots, and a locking bar disposed within the hollow tongue and having inclined slots defining locking tongues, which when the bar is shifted in one direction will engage with said pins and draw the tongue into said socket, and manually operable means for shifting the locking bar in the hollow tongue, the hollow tongue having transversely extending rivets engaging against the back of the locking bar, the locking bar being formed with longitudinally extending recesses on its back wherein said rivets are received, the ends of the recesses limiting the movement of the bar.

5. In a trunk, the combination with opposed sections, each having alining walls, of a channel member embracing one of said walls and riveted thereto and formed to provide a longitudinally extending hollow tongue having transversely extending slots at a plurality of points, a second channel member attached to the margin of the opposed section and formed to provide a socket to receive said tongue, the socket having transverse pins insertible into said slots in the other channel member, a locking bar, fitting within said tongue and held from transverse movement therein but having longitudinal movement, the locking bar being formed to provide a plurality of longitudinally extending locking tongues adapted when the locking bar is shifted in one direction to engage behind said inserted pins and in the other direction

releasing said pins, a pinion mounted upon the first named channel member, the locking bar having a rack with which the pinion engages, a shank carrying the pinion and extending through the channel member, a hasp mounted upon the shank for rotation therewith and having a hinged portion adapted to overlie the opposite channel member and carrying a lock, and a complementary keeper mounted upon the opposed channel member and adapted to be engaged with said hasp and lock.

6. In a trunk, the combination with opposed sections, each having alining walls, of a channel member embracing one of said walls and riveted thereto and formed to provide a longitudinally extending hollow tongue having transversely extending slots at a plurality of points, a section channel member attached to the margin of the opposed section and formed to provide a socket to receive said tongue the socket having transverse pins insertible into said slots in the other channel member, a locking bar, fitting within said tongue and held from transverse movement therein but having longitudinal movement, the locking bar being formed to provide a plurality of longitudinally extending locking tongues adapted when the locking bar is shifted in one direction to engage behind said inserted pins and in the other direction releasing said pins, a pinion mounted upon the first named channel member, the locking bar having a rack with which the pinion engages, a shank carrying the pinion and extending through the channel member, a hasp mounted upon the shank for rotation therewith and having a hinged portion adapted to overlie the opposite channel member and carrying a lock, and a complementary keeper mounted upon the opposed channel member and adapted to engage with said hasp and lock, the pinion having lateral portions overlying the rear edge of the locking bar.

7. As an article of manufacture, two complementary channel members adapted to be disposed upon and embrace and be riveted to the confronting edges of two trunk sections, and extending the entire length thereof, one of said channel members being formed to provide a portion adapted to embrace the corresponding trunk section, and a portion forming a hollow tongue, the other channel member being formed to provide a portion embracing the corresponding trunk section and a socket to receive said tongue, the socket being formed with double walls, the tongue having transverse slots at spaced intervals

and the socket having identically spaced transverse pins adapted when the tongue is inserted in the socket to enter said slots, a locking bar fitting snugly within the tongue and longitudinally shiftable therein the locking bar being formed with a plurality of slots intersecting the forward edge of the bar and defining tongues engageable behind the inserted pins when the locking bar is shifted in one direction, and means for shifting the locking bar, comprising a pinion disposed within the first named channel member, a shank on which the pinion is mounted extending through the channel member, a plate mounted upon the exterior of the channel member and through which the shank extends, and a hasp formed of two hinged sections, one of the sections being mounted upon the shank for rotation therewith and bearing against the plate, the other section constituting a lever and having a lock at its extremity, and a keeper mounted upon the other of said channel members and adapted to receive and engage with the lock on the hasp.

8. In a trunk, opposed sections having alining walls, a hollow metallic tongue attached to one of said sections and transversely slotted at intervals, a metallic socket member attached to the other of said sections and extending longitudinally thereof and formed to receive the tongue, the socket member having transversely extending pins at spaced intervals adapted to be received in said slots within the tongue, locking means disposed within the hollow tongue and shiftable in one direction to engage with said pins or in the other direction to disengage from said pins, and manually operable means for shifting said locking means within the hollow tongue.

9. In a trunk, opposed sections having alining walls, a hollow metallic tongue attached to one of said sections and transversely slotted at intervals, a metallic socket member attached to the other of said sections and formed to receive a tongue, the socket member having transversely extending pins at spaced intervals adapted to be received within the slots of said tongue when the tongue is inserted in the socket member, a locking bar disposed within the hollow tongue and having slots defining locking tongues which, when the bar is shifted in one direction, will engage with said pins, and manually operable means for shifting the locking bar within the hollow metallic tongue.

In testimony whereof I hereunto affix my signature.

ALLEN T. LONG.