

BELL SYSTEM PRACTICES
Motor Vehicles and
Construction Apparatus

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H-21 TRUCK PLATFORM LADDER OPERATION

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1. GENERAL

1.01 This section covers the operation and care of the H-21 Truck Platform Ladder.

2. DESCRIPTION

2.01 The H-21 Truck Platform Ladder is a special extension ladder arranged so that when not in use it can be conveniently carried overhead on a cable and line maintenance truck equipped with an H-21 Ring Assembly, as shown in Fig. 1, thus leaving the interior of the body unobstructed.

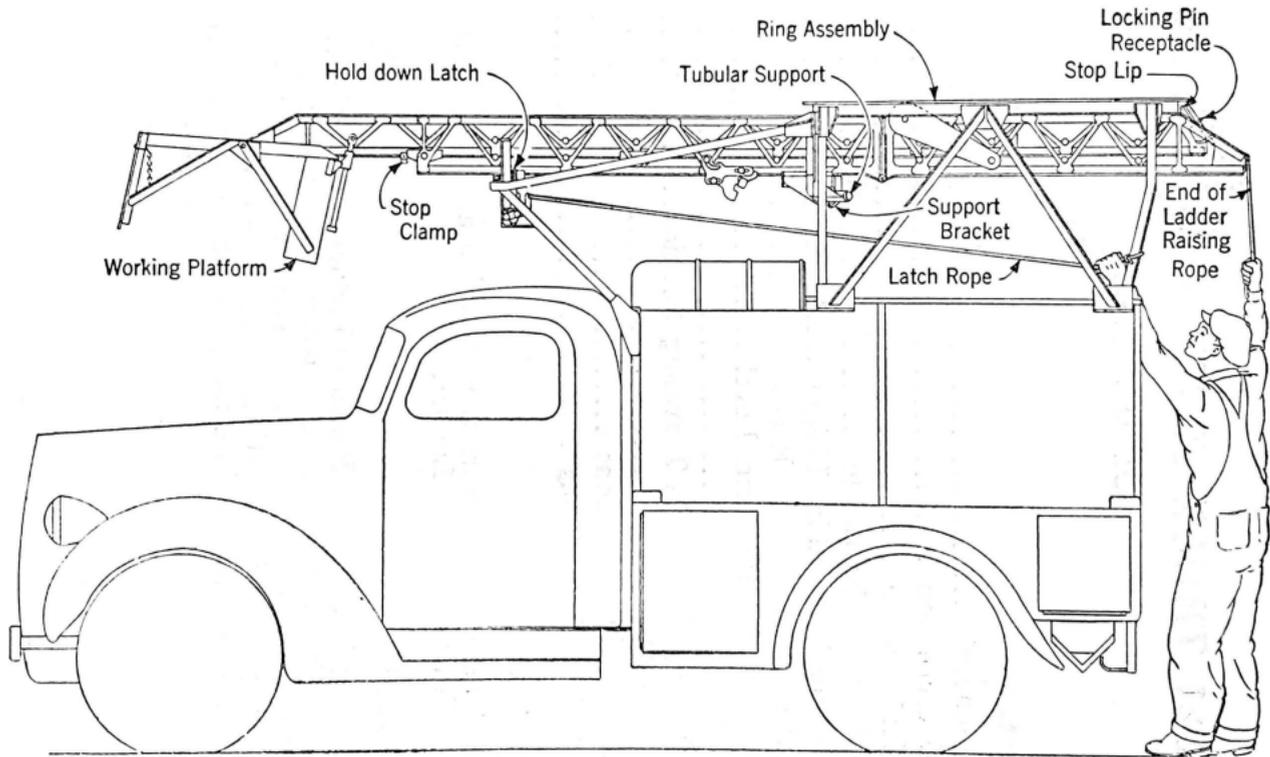


Fig. 1

2.02 When erected in its working position the ladder stands upon the floor of the truck and leans against the top of the Ring Assembly so that it extends upward and outward beyond it as shown in Fig. 2. It pivots about the locking pin in the floor of the truck so that the ladder can be pushed around the ring into any desired position.

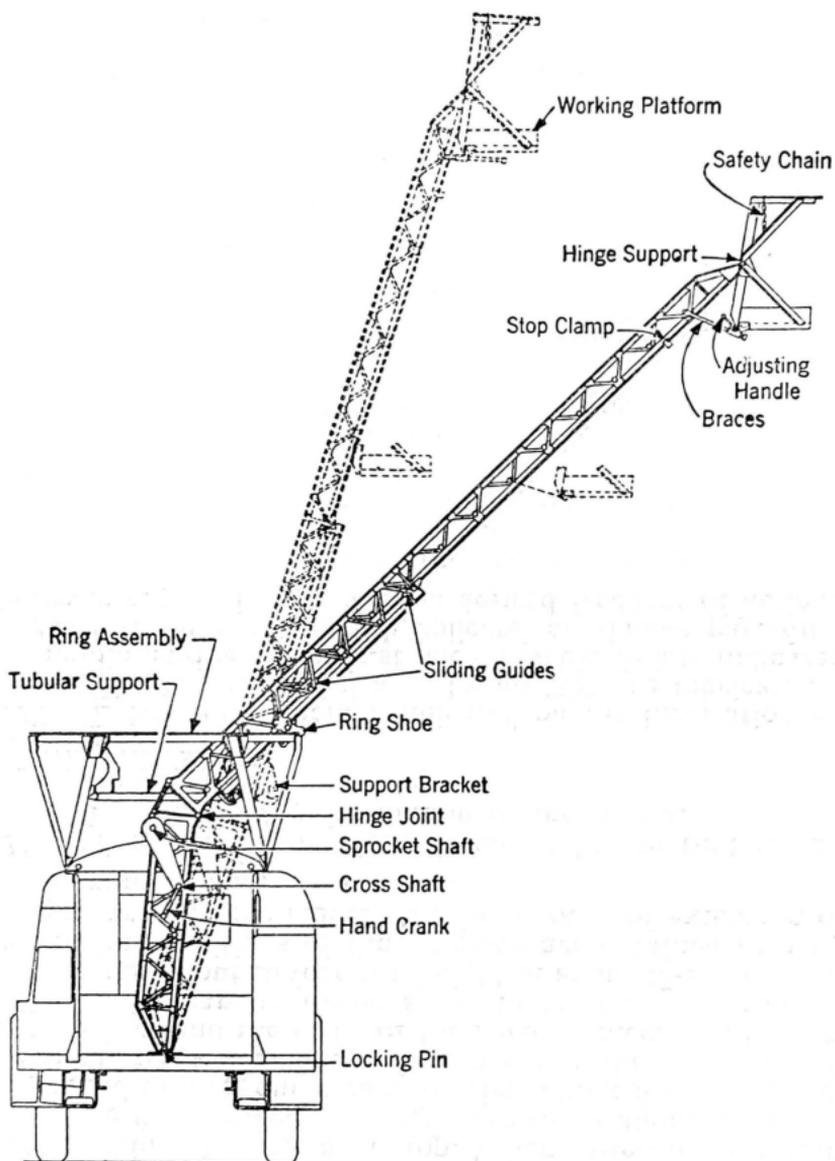


Fig. 2

2.03 The upper ladder section which can be raised or lowered by means of a rope like an ordinary extension ladder, has a working platform at its top. When raised to its maximum height the floor of the working platform is about 21 feet from the ground and its outer edge reaches about 5 feet beyond the side of the truck depending of course upon the deflection of the truck springs and the slope of the road surface. The inclination of the ladder can be varied so as to increase the reach to a maximum of about 10 feet at a height of about 17-1/2 feet. Other intermediate positions of the platform are obtained by varying the angularity of the ladder and the amount of extension of its upper section.

2.04 The working platform is adjustable so that it can be leveled for any inclination of the ladder.

3. LUBRICATION

3.01 Lubricate all points indicated on the lubrication chart, Fig. 3. Points indicated by an "O" are lubricated with automobile engine oil at least once a week. Points indicated by a "PW" are lubricated with splicers' or similar paraffin wax whenever required to obtain the desired freedom of action.

LUBRICATION CHART

O - Use Automobile Engine Oil At Least Once A Week
 PW - Use Paraffin Wax Whenever Required

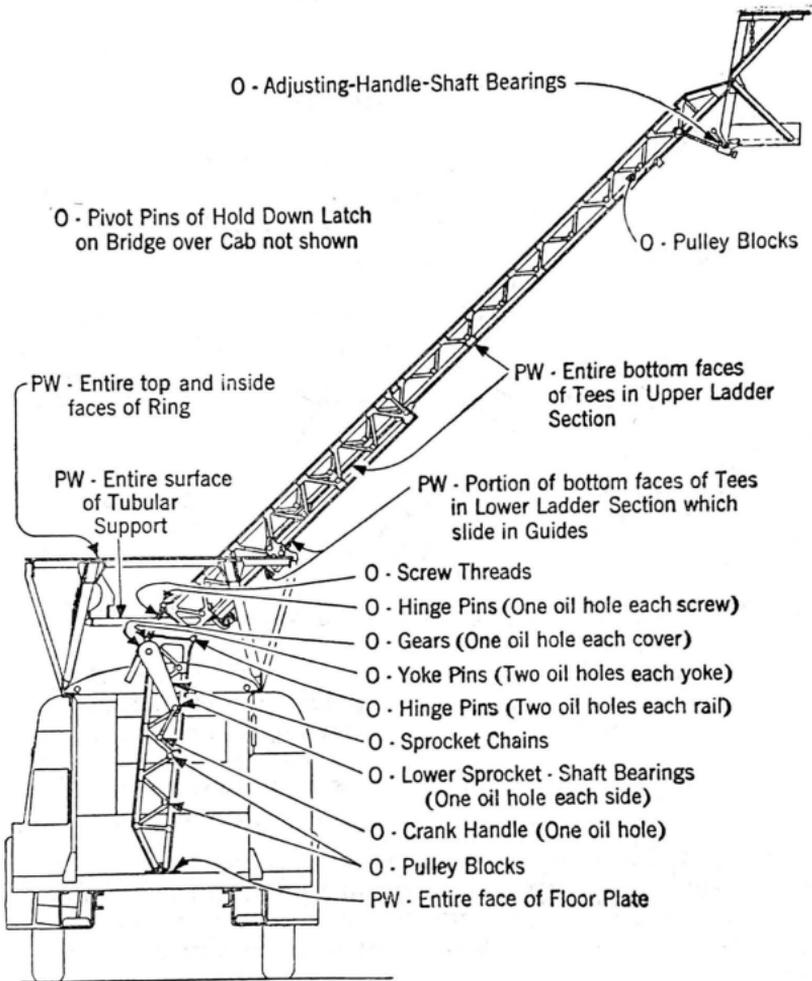


Fig. 3

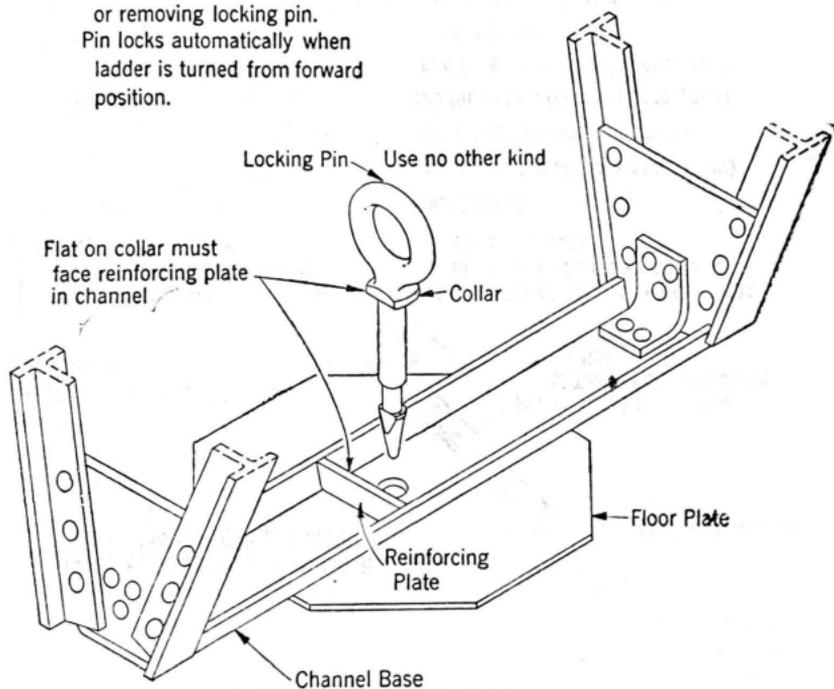
4. ERECTING THE LADDER

- 4.01 Before erecting the ladder, be sure to learn and understand all the safety and general precautions involved.
- 4.02 Release the hold-down latch by pulling on the latch rope and pull the bottom end of the ladder downward pivoting it about the tubular support at the front of the ring

assembly. This can be most conveniently done when standing on the ground at the rear of the truck if the pull cord for the hold-down latch is carried to an accessible point at the rear of the truck and the end of the ladder raising rope is permitted to hang from the bottom end of the ladder within reach. See Fig. 1.

4:03 Bring the bottom of the ladder down against the floor of the truck, line up the hole in the channel base of the ladder with the one in the truck floor, insert the locking pin and push it down until its collar is against the base of the channel. In order to permit the pin to go down all the way, the flat on the collar must face the reinforcing plate across the channel base. When the pin is all the way down the ladder can be swung into any desired position on the ring with the pin acting as a pivot.

Ladder must face directly toward front of truck whenever inserting or removing locking pin.
Pin locks automatically when ladder is turned from forward position.



Bottom of Lower Ladder Section

Fig. 4

4.04 When the ladder is resting against the ring, insert the unthreaded eye bolt in the hole in the top of and near the opening in the ring using the hole which is on the same side of the truck as the ladder, in order to prevent the ladder

from being accidentally pushed into the ring opening. See Fig. 10.

5. ADJUSTING LADDER HEIGHT

5.01 The H-21 Ladder, like most other extension ladders, is raised or lowered by means of a rope and pulley blocks. The ladder height can be conveniently adjusted by the workman standing on the ground at the rear of the truck if the erected ladder is placed so that its one side rail faces toward the rear and the end of the ladder rope passes from the pulley block on the bottom rung of the lower ladder out through the side rail of the lower ladder between the struts as shown in Fig. 5.

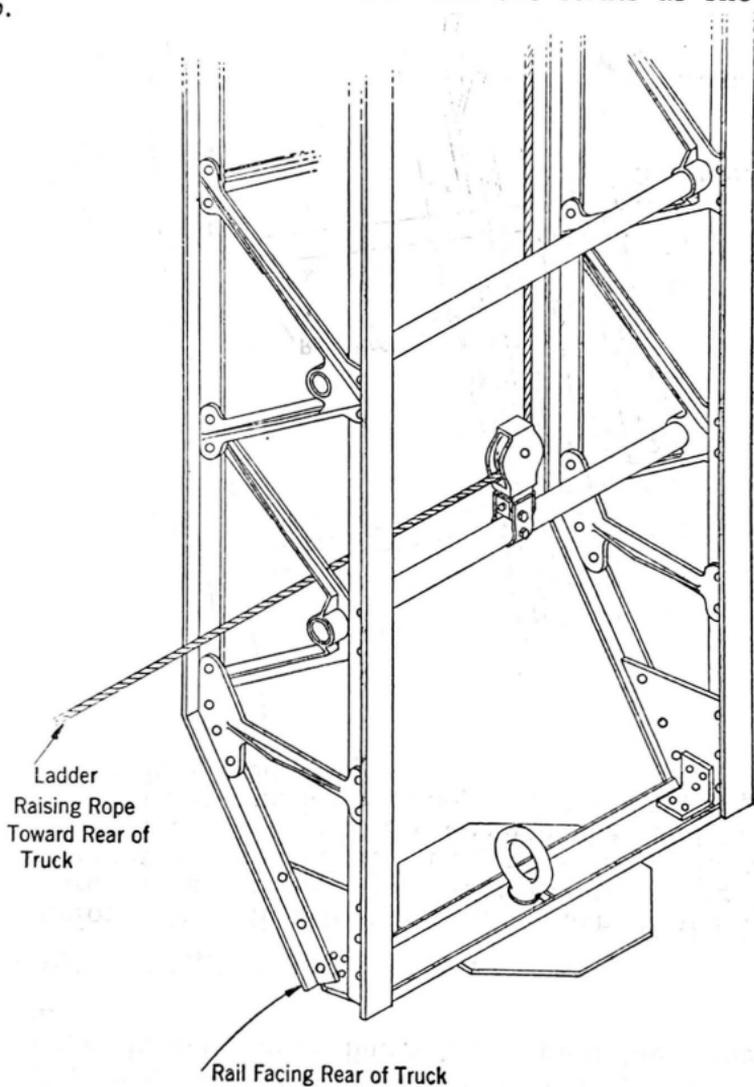
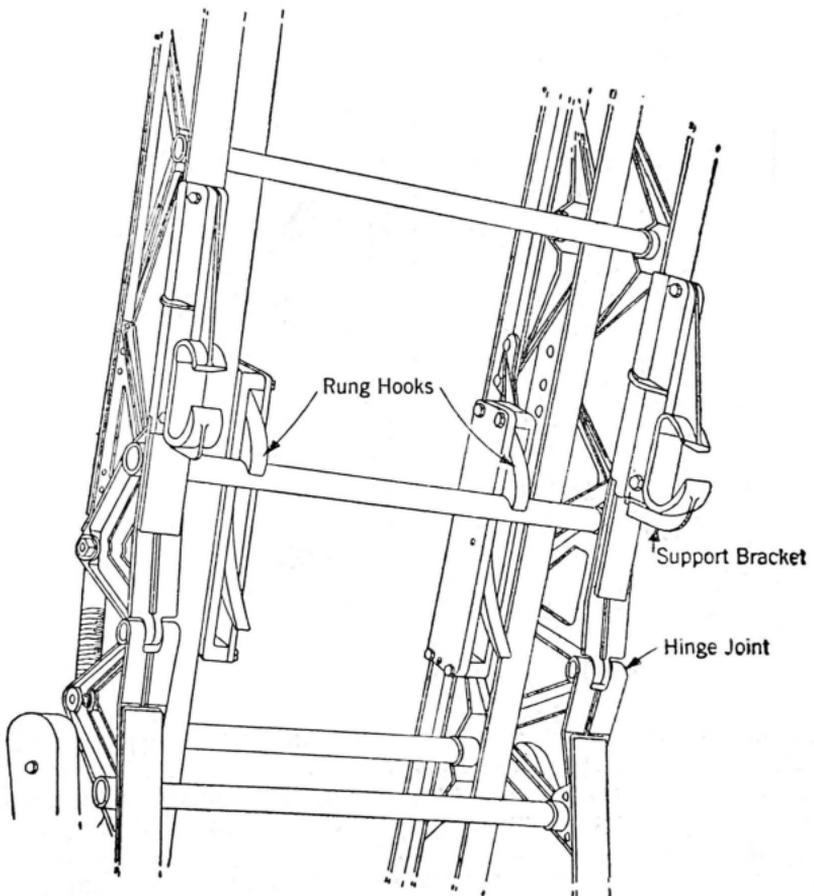


Fig. 5

5.02 A stop at the bottom end of the right-hand rail of the upper ladder section limits the amount the ladder can be raised.

6. ADJUSTING LADDER REACH

6.01 Before attempting to adjust the reach of the ladder, raise the upper section so that the two rung hooks which support it are engaged with a rung above the hinge joint as shown in Fig. 6. This permits opening the joint without damage to the rungs and loss of support for the upper ladder when the joint is opened.



Rung Hooks must be on rung above hinge joint before Hinge Joint is opened.

Fig. 6

6.02 After the ladder has been pushed to a point on the ring so that neither support bracket is resting upon the tubular support and its upper section has been raised, as covered in 6.01, its inclination can be increased by adjusting the opening in the joint. To do this, place the hand crank on the hexagonal end of either the upper sprocket shaft, see Fig. 7, or the lower cross-shaft at the side of the ladder, adjust the ratchet of the crank as required and turn in a counter-clockwise direction when working on the right side of the ladder and in the opposite direction when working on the left side. When used on the lower shaft the action is only about one-third as fast as on the upper shaft, but the crank is proportionately easier to operate. Also it has been found that when the crank is used on the lower shaft the action of the chains and sprockets is smoother and otherwise more satisfactory. The inclination can be increased so that the upper ladder is inclined at an angle of about 45° with the floor of the truck. Stop collars on the screws limit the maximum amount of inclination.

6.03 The inclination of the ladder is decreased by reversing the action of the ratchet hand crank and turning the crank in the opposite direction. Shifting the small control lever on the crank arm reverses the ratchet.

6.04 The hand crank can be most conveniently operated when the side of the ladder on which it is used faces directly toward the rear as shown in Fig. 7.

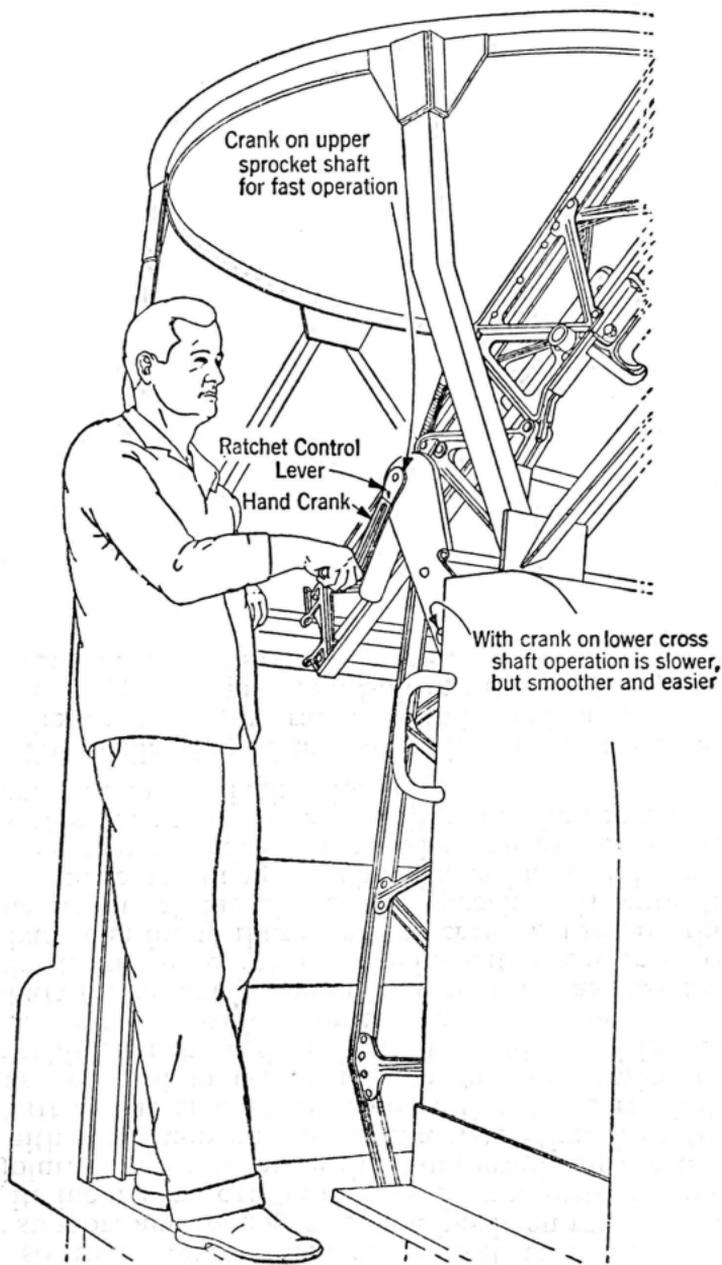


Fig. 7

7. ADJUSTING PLATFORM LEVEL

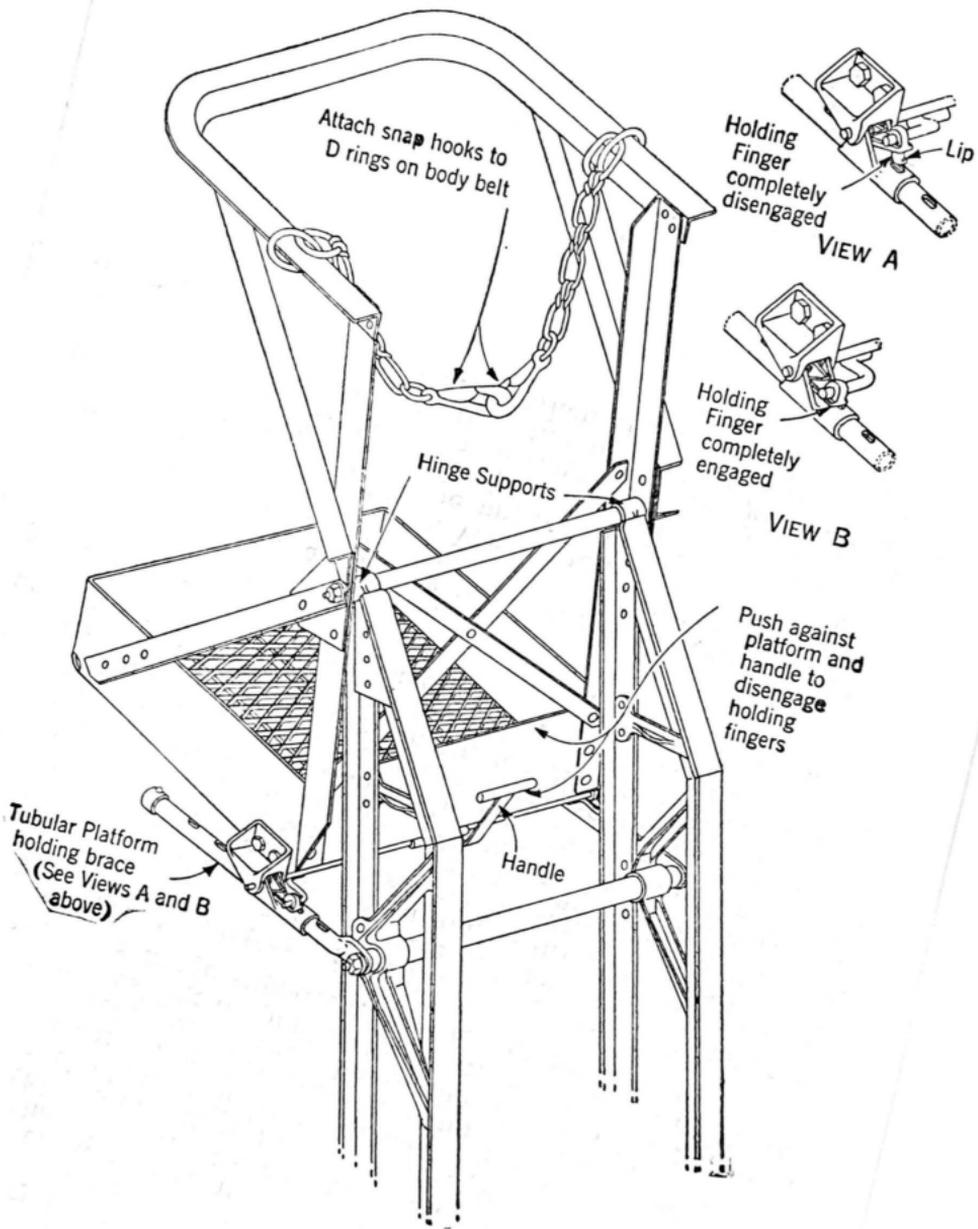


Fig. 8

H-21 TRUCK
PLATFORM
LADDER
OPERATION

7.01 In order to adjust the level of the platform, it is necessary to first lift the two holding fingers out of the holes in the two tubular braces on the sides of and just below the platform. These fingers are raised by pressing the handle at the rear of the platform toward the platform, but in order to operate this handle it is first necessary to push the platform away from the ladder slightly and hold it in that position so that the fingers can disengage from the tubular braces. While the fingers are held out of their holes, the platform level may be adjusted by pushing or pulling the platform thus swinging the cage about its hinge support at the top of the ladder.

7.02 When the platform is at the desired level, the pressure against the handle is released and the cage rocked back and forth slightly until both fingers drop into the holes of their respective braces. Care should be taken to see that the fingers extend all the way into the holes. The platform is then pulled toward the ladder so as to lock the lips on the fingers under the walls of the tubular braces. These lips prevent self disengagement of the fingers from the braces. In order to test their complete engagement, simultaneously pull on the platform toward the ladder and push against the handle. If the fingers do not lift out they are locked and the cage may be entered.

8. USING LADDER

8.01 After the ladder has been lubricated, erected and adjusted as to height and reach it is pushed around to the desired position on the ring. When the hinge joint is open, the ladder can be used with the upper ladder section lowered so that its bottom end extends down beyond the hinge joint as long as the rung hooks are on a rung above the joint. When so used however make sure that the protruding bottom end is unobstructed in its movement when the ladder slides around the ring.

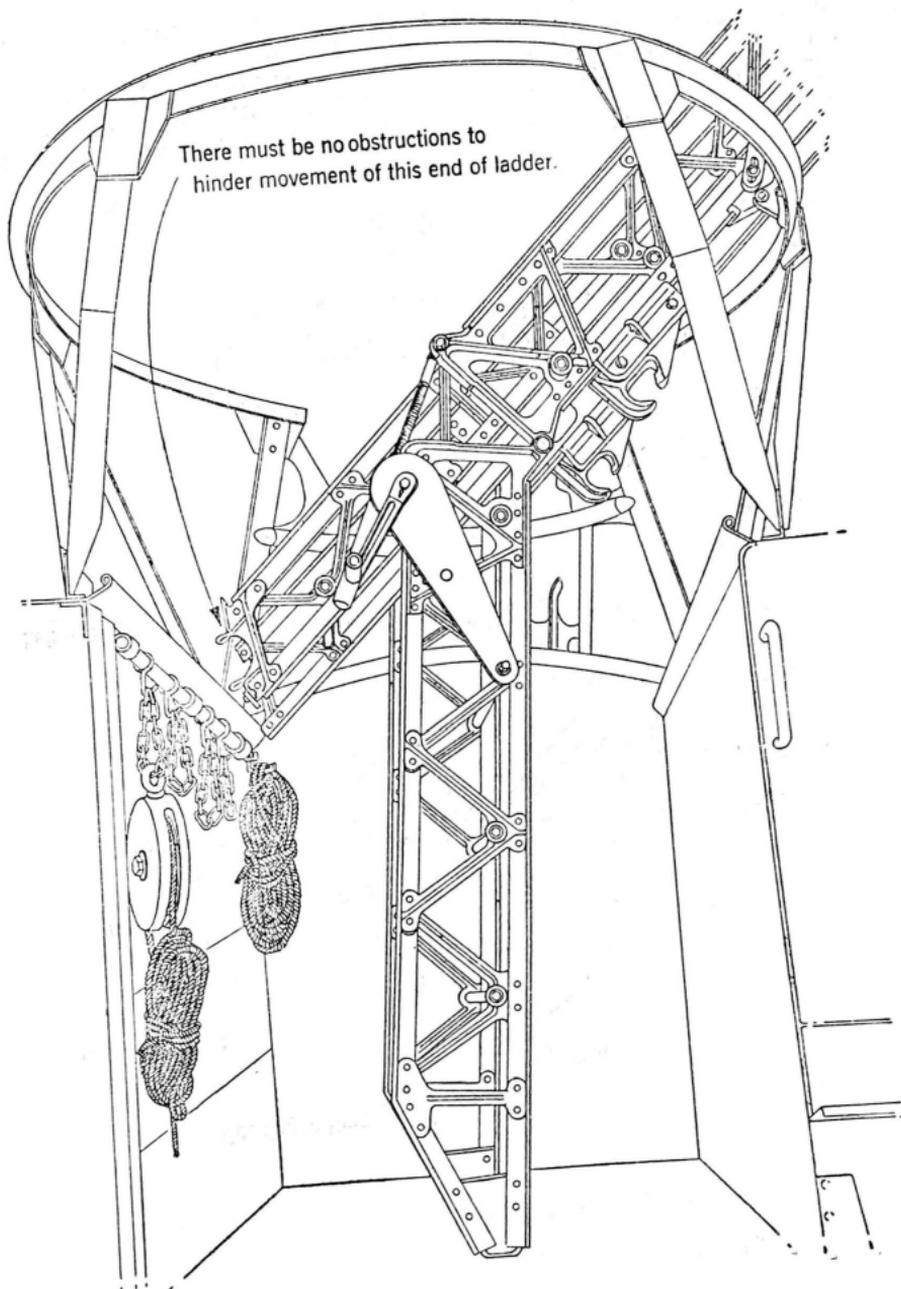
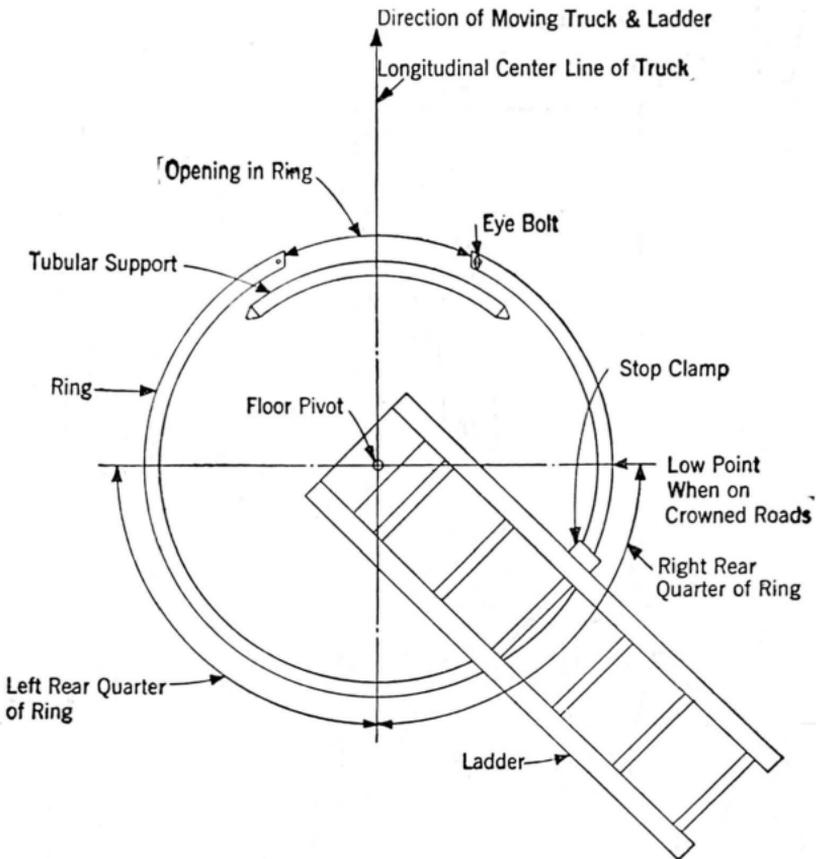


Fig. 9

8.02 If the operations to be performed require the truck to move along the line the ladder should extend over the rear quarter of the ring. See Fig. 10.



When Ladder is used on Left Side of Truck
Place Eye Bolt and Stop Clamp on side
opposite from That Shown Above.

Fig. 10

8.03 When working on a crowned road and the side of the truck over which the ladder extends is lower than the other, there is a tendency for the ladder to slide from the rear quarter toward the lower part of the ring. In such a case place the stop clamp on the ring at the front side of the ladder.

8.04 Level the platform before entering it and connect the snap hooks of the safety chains to the D rings on the body belt immediately after entering.

9. PLACING LADDER IN TRAVELING POSITION

- 9.01 Connect the ends of the safety chains on the working platform.
- 9.02 Adjust the platform so that it is in the position closest to the ladder.
- 9.03 Completely close the hinge joint in the lower ladder section and store the crank handle in the truck body.

9.04 Lower the upper ladder section so that its rung hooks are completely engaged with the third rung on the lower ladder section and bind the two ladder sections together by wrapping and tying the remainder of the rope around the first and second rungs of both ladder sections. Pass the end of the rope over the channel base as shown in Fig. 11 and allow it to hang down for convenience in erecting the ladder as shown in Fig. 1.

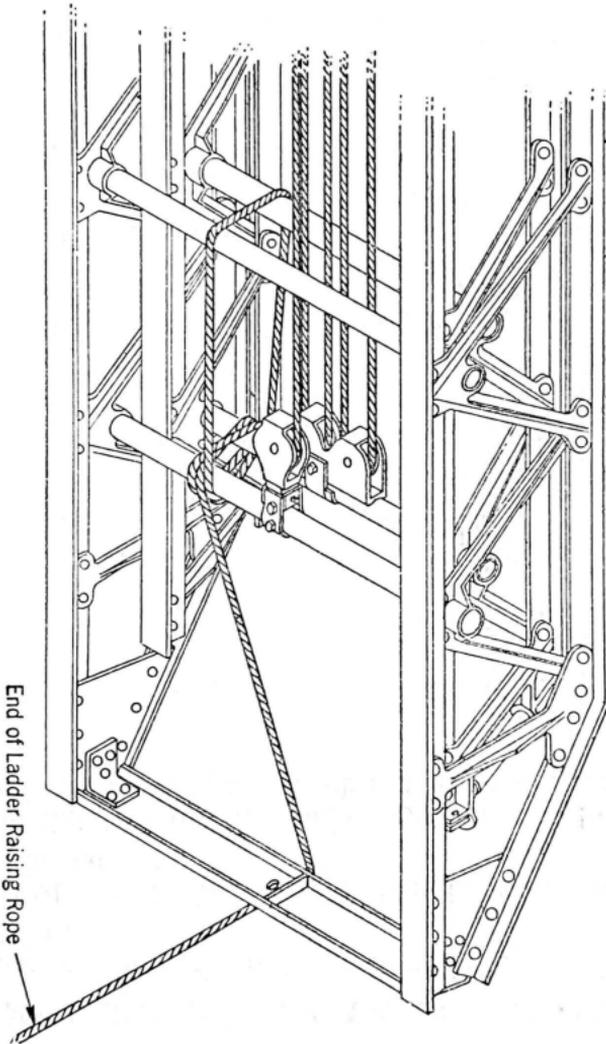


Fig. 11

9.05 Remove the unthreaded eye bolt from the hole near the ring opening and slide the ladder into the opening. Center the ladder in the opening, push forward against the base of the ladder, pull out the locking pin, place the pin in its receptacle at the bottom end of the right-hand rail of the upper ladder section, swing the ladder into its horizontal position controlling it by hand until it comes to rest upon the support above the cab. See that the lip at the bottom end of the right-hand upper ladder rail is in back of the plate on the vertical leg of the ring angle and that the ladder is securely held down at the front by the ladder hold-down latch above the cab.

10. INSPECTION

10.01 At intervals of one week of service and immediately after any accidental or other severe shock or strain to which the ladder might have been subjected, examine the entire ladder for any damaged parts.

10.02 At intervals of one month examine the ladder for excessive wear at all friction points.

10.03 Report immediately any damaged or excessively worn parts to your supervisor.

10.04 Two stop clamps, one on the under side of each of the two rails in the upper ladder section, limit the downward travel of the upper section. See Fig. 2. If the ladder is not equipped with these stops they should be added. They are clamped to the "T" members and can be loosened and moved. They should be just high enough on the ladder rails to permit the upper section to be lowered to the point where the rung hooks pass the bottom rung on the lower section and release the trips. Both stops should make contact with the tops of the rail guides on the lower section at the same time.

11. GENERAL PRECAUTIONS

11.01 Whenever pivoting the ladder about its tubular support, as in erecting or restoring it to its traveling position, be sure that the ladder is and remains centered in the ring opening so as to prevent any parts on the sides of the ladder from rubbing against or becoming caught at the ends of the ring or the sides of the tubular support brackets. Such interference can be most easily avoided if the operations are performed when the truck is standing on a flat road surface. When the truck leans to one side as on a crowned road the ladder tends to slide toward the low side and makes centering the ladder more difficult.

11.02 Before turning the crank which operates the hinge joint, be sure that the ladder has been swung far enough around the ring so that the two support brackets are no longer on the tubular support, that the rung hooks which support the upper ladder section are on a rung above the hinge joint as shown in Fig. 6, and that there is sufficient clearance between the handle and other objects to permit its operation without injury to the hand.

11.03 Always see that the hinge joint in the lower ladder section is completely closed before sliding the ladder around the ring into the opening at the front. If the joint is not completely closed, the support brackets will not properly engage with and slide along the curved tubular support.

11.04 When operating the crank which adjusts the opening of the hinge joint in the lower ladder section, apply only a reasonable amount of effort as the crank should turn freely. If an appreciable effort is required stop and investigate the cause.

12. SAFETY PRECAUTIONS

12.01 One man should be assigned the responsibility for all operations required in erecting, using and restoring the ladder to its traveling position. He should make sure that any signals that might be used are thoroughly understood by all persons concerned.

12.02 Whenever handling the ladder, be careful to avoid placing the hands or fingers where they might be pinched, crushed or otherwise injured.

12.03 Whenever operating the ladder, as for example when raising or lowering the upper section by means of the rope or when pushing it around the ring, be sure that no one is in a position where he might be injured as a result of the operations being performed.

12.04 Before erecting the ladder, make sure that in erecting, raising, swinging or otherwise operating it there will be no interferences from near-by objects or structures nor undesirable contacts with them. If contact is accidentally established between the ladder and a power conductor or a charged telephone wire, strand, or cable, always bear in mind that the entire truck and its contents also become electrically charged. In such case immediately caution all on the ground near-by not to attempt to enter the truck nor in any way come into contact with it or any of its contents, and every one on the truck to remain there until after the contact has been broken.

12.05 When placing the locking pin, which holds the ladder to the floor be sure that it is all the way down with its collar against the bottom of the channel base of the ladder. This is a specially designed pin. No other type should be used. See 4.03.

12.06 After the ladder is erected and supported by the ring, place the unthreaded eye bolt in the hole in the top of the ring which is on the same side of the truck as that on which the ladder is used, in order to prevent the ladder from being accidentally pushed into the opening in the ring. See Fig. 10.

12.07 Whenever the ladder is used on a moving truck, as for example when inspecting cable, the truck should be traveling ahead and the ladder should be extended over the side in the rear quarter of the ring so that in case the moving ladder comes into contact with any obstruction it is swept toward the rear of the truck and away from the obstruction. This should be kept in mind when clamping the ladder stop to the ring. This stop is provided for use when working on crowned roads in order to prevent the ladder from sliding toward the low point on the ring. It should always be placed on the ring at the front of the ladder as shown in Fig. 10, so that the ladder is free to swing toward the rear.

12.08 After completing the raising or lowering of the upper ladder section always see that the two hooks on the ladder locks are completely engaged with one of the rungs on the lower ladder section. See Fig. 6.

12.09 No one should be on the ladder or its platform when adjustments in height or reach are made.

12.10 After adjusting the level of the working platform and just before entering upon it, always make sure that the two locking fingers, one on each side of the platform, are fully engaged with the tubular platform holding braces. See 7.01 and 7.02.

12.11 Immediately after entering upon the working platform, attach both safety chains to the D rings of your body belt.

12.12 No more than one man at a time shall ever be on the platform.

12.13 After the ladder has been placed in the traveling position, make sure that the latch above the cab which holds the front end of the ladder down, is fully engaged and the stop-lip on the right-hand rail at the bottom end of the

ladder is directly behind the stop-plate on the ring so that the upper ladder section is prevented from sliding forward.

12.14 It should be kept in mind that when the truck with ladder erected is operated on crowned roads, stability is not as good as on flat surface roads, the stability diminishing in proportion to the increase in slope of the road surface and the amount the ladder is extended over the side of the truck.

12.15 When working on the ladder of a moving truck caution the driver beforehand to avoid holes in the road which might cause a sudden lurch, or depressions which would appreciably tip the ladder.

12.16 Keep the floor of working platform free of tools and materials. When the ladder has been raised to the desired height, tie the raising rope securely around the side rail of the lower ladder section making sure that the tension in the rope is not so great as to lift the hooks off the rungs. Any excess rope should be neatly coiled and tied to the side rail of the ladder in order to prevent it from fouling as the ladder pivots on the floor or from falling off and trailing behind the truck when in motion.