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WAR DEPARTMENT TECHNICAL MANUAL

ORDNANCE MAINTENANCE

WRIST WATCHES, POCKET WATCHES, STOP WATCHES, AND CLOCKS

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CHAPTER 4
MESSAGE CENTER CLOCK M1

75. IDENTIFICATION.

a. The message center clock is mounted in a hardwood carrying case. The clock movement is of the 8-day type, fitted with an 11-jewel watch movement. The dial has a black background, with the name, "CLOCK, MESSAGE CENTER, M1" outlined in white. Clocks of later manufacture have arabic numerals running from 13 to 00 and a double hour hand so that it may be used with the 24-hour system of keeping time used by the armed forces.

76. DISASSEMBLY OF MESSAGE CENTER CLOCK M1.

a. **Remove Clock From Carrying Case.** Remove the three screws which attach clock to mounting panel in wooden case and remove the clock (fig. 202).

b. **Remove Bezel.** Remove bezel by unscrewing it counterclockwise (fig. 203).

c. **Remove Hands.** Protect dial with paper and remove hands, using the hand remover (fig. 204).

d. **Remove Reflector.** Remove the three screws which attach reflector to dial and lift off reflector (fig. 205).

e. **Remove Movement From Case.** Remove setting knob screw and knob. Hold hand over dial, invert case, and slide movement out of case (fig. 206).

f. **Remove Dial and Dial Ring.** Remove three screws which attach dial to plate and lift off dial. Remove three grasshoppers from the dial ring feet under dial plate and lift off dial ring (fig. 207).

g. **Remove Setting Mechanism** (fig. 208). Remove hour wheel. Remove minute wheel screw and minute wheel. Remove setting pinion screw and setting pinion assembly. Remove cannon pinion. Remove setting pinion screw and gear; remove setting stem screw and pull out the stem which permits removal of compression spring from setting bridge.

h. **Release Unused Power of Mainspring.** Release the unused power of the mainspring, exercising caution because the mainspring is very strong.

i. **Remove Back Plate.** Remove the four back plate screws and back plate. Do not lay movement on the bench dial side down, unless the center pinion is protected with a movement block (fig. 209).

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Figure 200 — Message Center Clock M1

j. Remove Fourth Bridge Plate. Remove the three fourth bridge pillar screws and fourth bridge plate (fig. 210).

k. Remove Regulator Staff, Train Bridge, Fourth and Third Wheels, and Escape Wheel Bridge and Wheel. Loosen regulator staff screw and lift out regulator staff assembly. Remove the three train plate screws and train plate. Remove two escape wheel bridge screws and remove bridge. Lift off fourth, third, and escape wheel assemblies (fig. 211).

l. Remove Mainspring Barrel and Train Wheels. Remove

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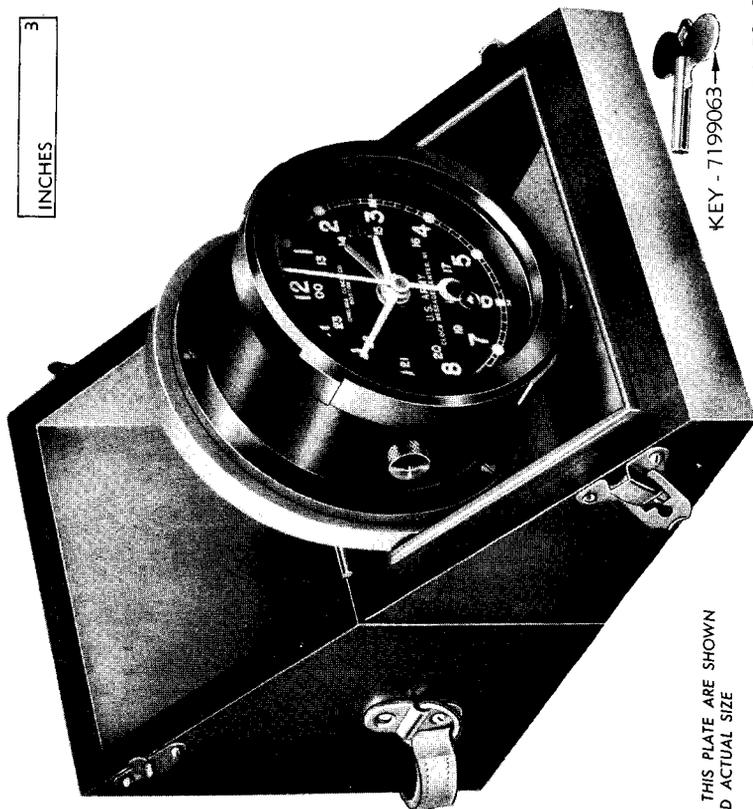


Figure 201 — Message Center Clock M1 (Later Manufacture)

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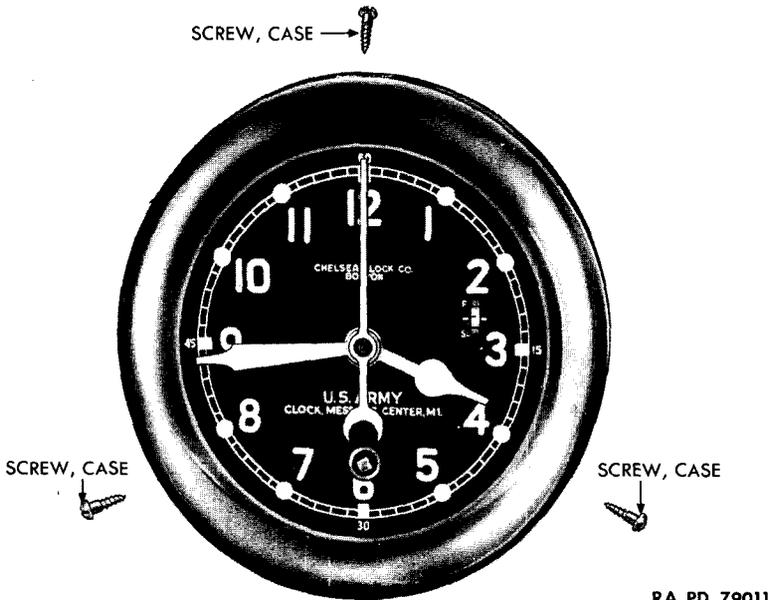


Figure 202 — Message Center Clock M1 — Removed From Carrying Case

mainspring barrel assembly, intermediate wheel, center wheel, and ratchet wheel (fig. 212).

m. Remove Regulator Worm Assembly, Click, and Click Spring. Remove two screws from the train side of the pillar plate and lift off the worm assembly. Remove ratchet wheel. Remove the click screw and click. Remove click spring screw and click spring (fig. 213).

n. Remove Center Wheel Plate, Escapement Plate, and Assembly. Remove two screws from underneath the intermediate and center wheel plate, releasing the balance and escapement assembly plate. Lift off the assembly (fig. 214).

o. Remove Balance and Escapement Assembly From Train Plate. Push the regulator to the extreme fast position, loosen the hairspring stud screw, and free the hairspring stud with a pin pusher from the balance cock. Remove the balance cock screw and balance cock. If the balance cock fits tightly, insert screwdriver in slot underneath balance cock and pry it loose. Remove balance cock assembly with tweezers and secure the hairspring stud screw to

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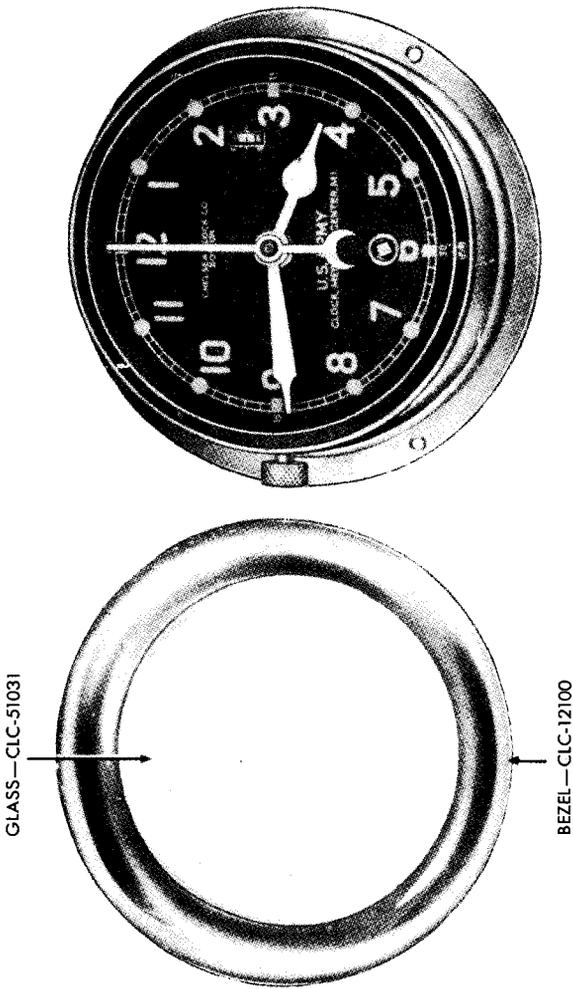


Figure 203 — Message Center Clock M1 — Bezel Removed

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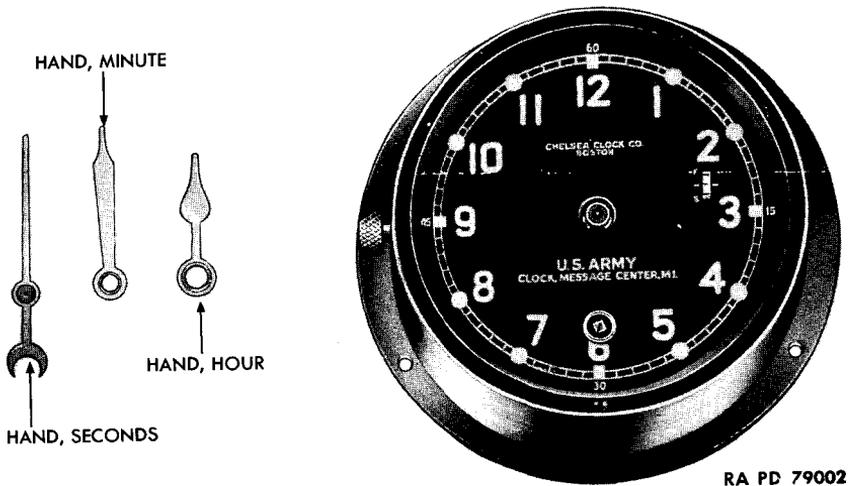


Figure 204 — Message Center Clock M1 — Hands Removed

prevent losing it. Remove two upper dome screws from balance cock, and remove balance cock cap jewel and regulator. Remove two lower cap jewel screws, grasp the lower cap jewel with tweezers, and lift it out of plate (fig. 214).

p. Remove Pallet Bridge and Pallet Assembly. Remove two pallet bridge screws and lift off pallet bridge assembly. Remove pallet assembly (fig. 216).

q. Remove Mainspring Assembly. Tap the mainspring barrel arbor with a brass mallet and snap the barrel cap out its groove. Remove barrel cap. Remove barrel arbor by turning it clockwise to release it from mainspring. Remove mainspring from the barrel by grasping it by the inside coil with pliers and slowly unwinding it from the barrel. Do not remove the mainspring from the barrel unless it is necessary to do so for replacement (fig. 218).

77. ASSEMBLY OF MESSAGE CENTER CLOCK M1.

a. Winding in Mainspring. Select the proper size mainspring winder and wind the mainspring into it slowly. Insert the mainspring winder into the barrel, hook the end of mainspring on barrel hook, and press plunger which transfers mainspring into the barrel. Insert the barrel arbor, turning it counterclockwise till the mainspring engages the arbor hook. Snap barrel cap into its recess in barrel (figs. 68, 69, and 70).

MESSAGE CENTER CLOCK M1

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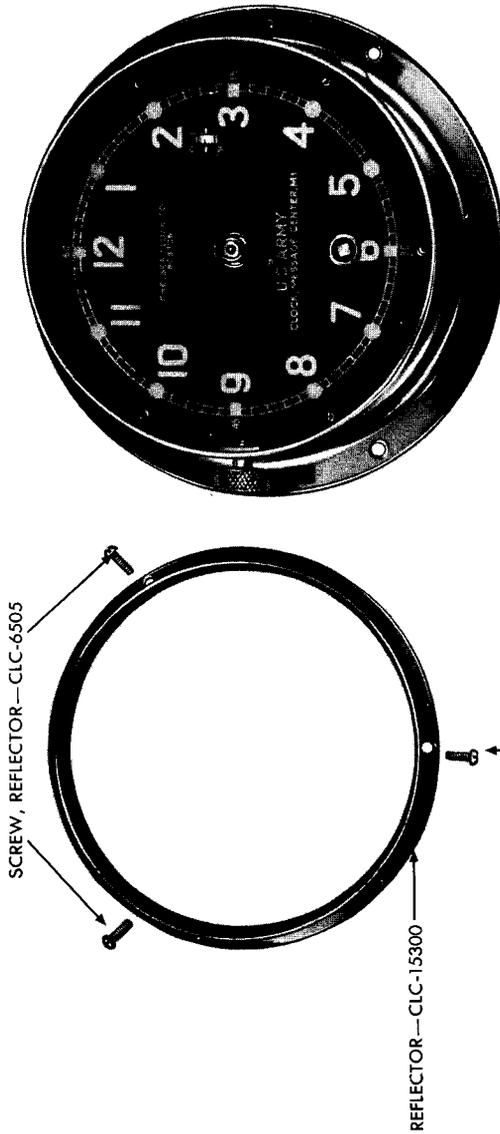
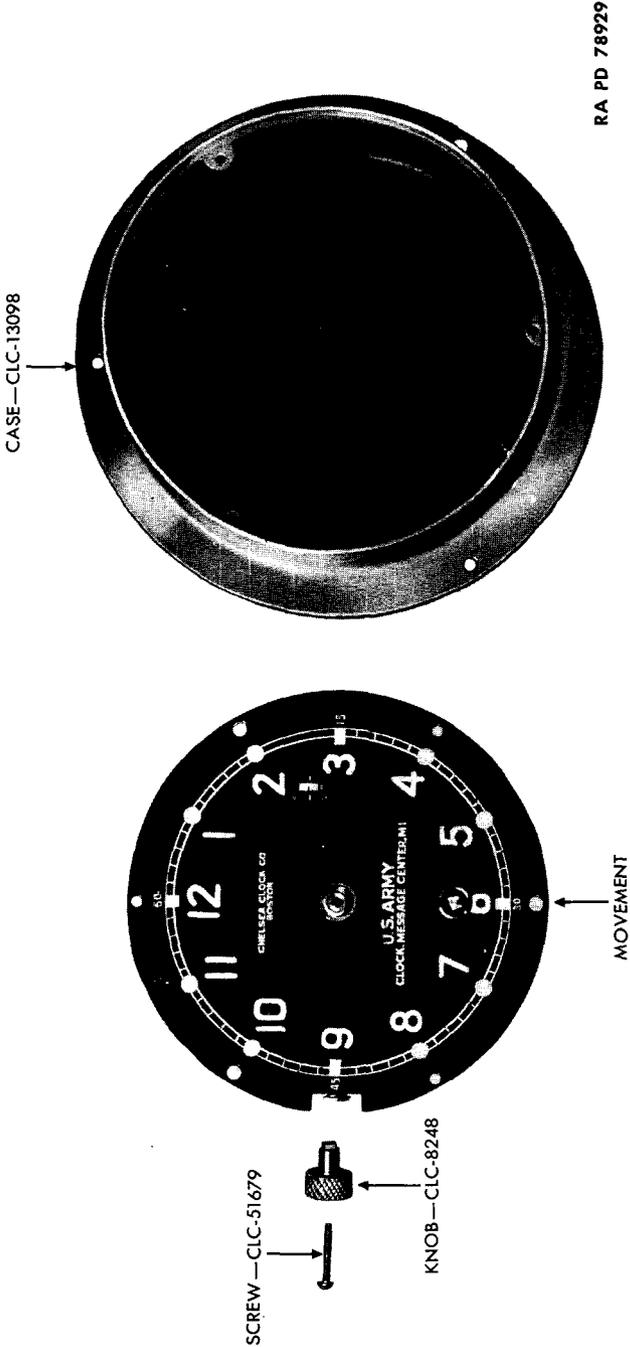


Figure 205 — Message Center Clock M1 — Reflector Removed

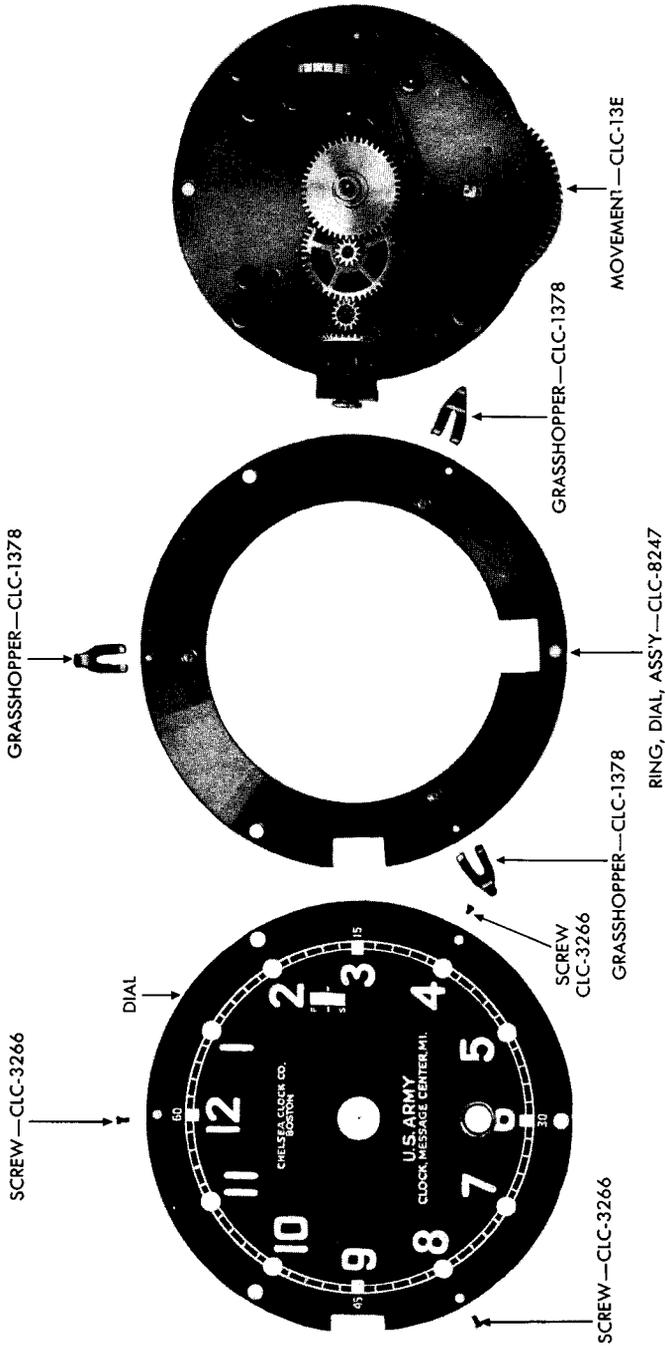
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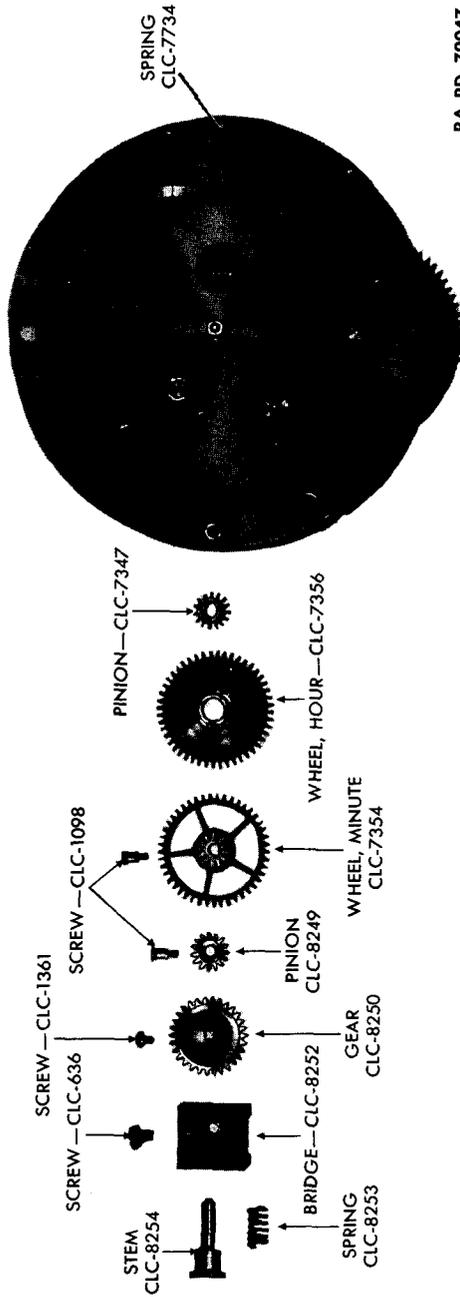
Figure 206 — Message Center Clock M1 — Movement Removed From Case

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Figure 207 — Message Center Clock M1 — Dial and Dial Ring Removed



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Figure 208 — Message Center Clock M1 — Setting Mechanism Removed

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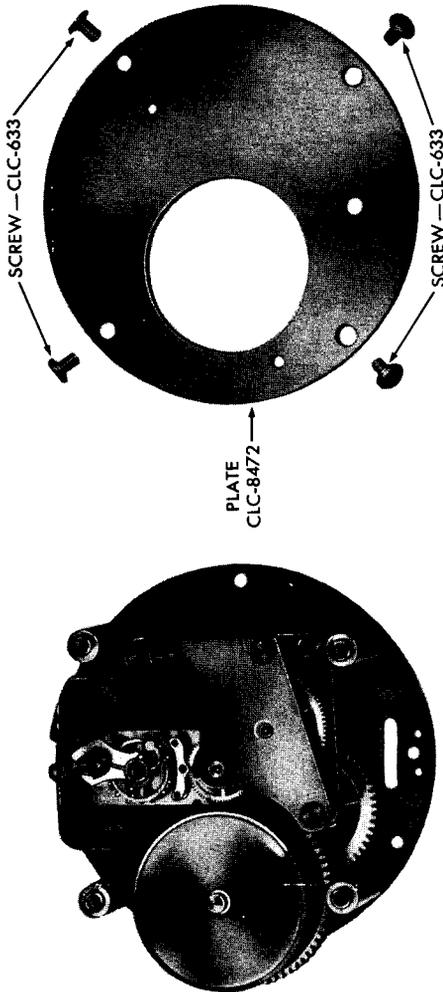


Figure 209 — Message Center Clock M1 — Back Plate Removed

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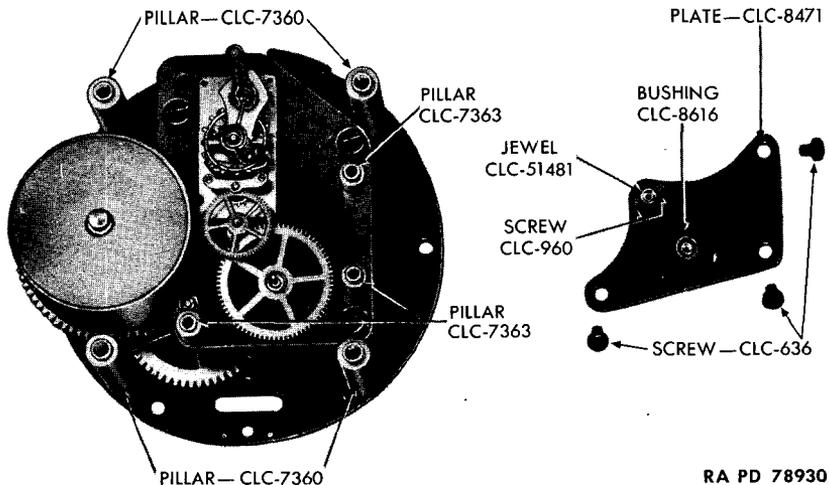


Figure 210 — Message Center Clock M1 — Fourth Bridge Plate Removed

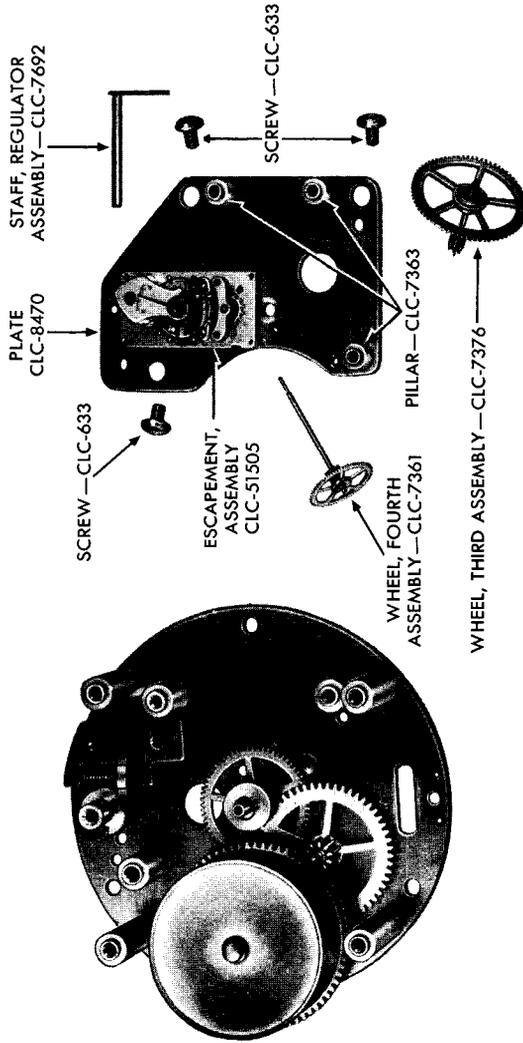
b. **Replace Cap Jewels.** Grasp the balance end stone cap with tweezers, place it on the escape plate, and secure with balance end stone cap screws. Replace the dome and regulator and secure in place with upper cap jewel screws. Carefully protect the regulator pins when replacing regulator.

c. **Replace the Setting Pinion Assembly** (fig. 208). Place the compression spring on stem and insert the assembly through large hole in bridge, compressing the spring until the stem extends through small hole in bridge. Hold assembly in this position, install gear with teeth away from bridge, and secure it in place with its screw. Install the setting assembly in place on lower plate, placing gear in center of slot in plate. Secure assembly in place with screws.

d. **Replace Regulator Index Assembly, Click, and Click Spring** (fig. 213). Place the regulator index wheel assembly on train side of lower plate, aline wheel to center of slot, and secure with screws. Place regulator gear so slot in gear alines with pin in lower plate. Replace click and secure with its screws; then replace click spring and secure with screw. **NOTE:** *The movement should be supported on a movement block during the balance of assembly.*

e. **Replace Train Wheels and Mainspring Barrel** (fig. 212). Place center wheel in position on train side of plate. Place intermediate wheel assembly in position on plate. Place ratchet wheel in position on the mainspring barrel arbor with the teeth facing

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Figure 211 — Message Center Clock M1 — Regulator Staff, Train Bridge Assembly, and Fourth and Third Wheels Removed

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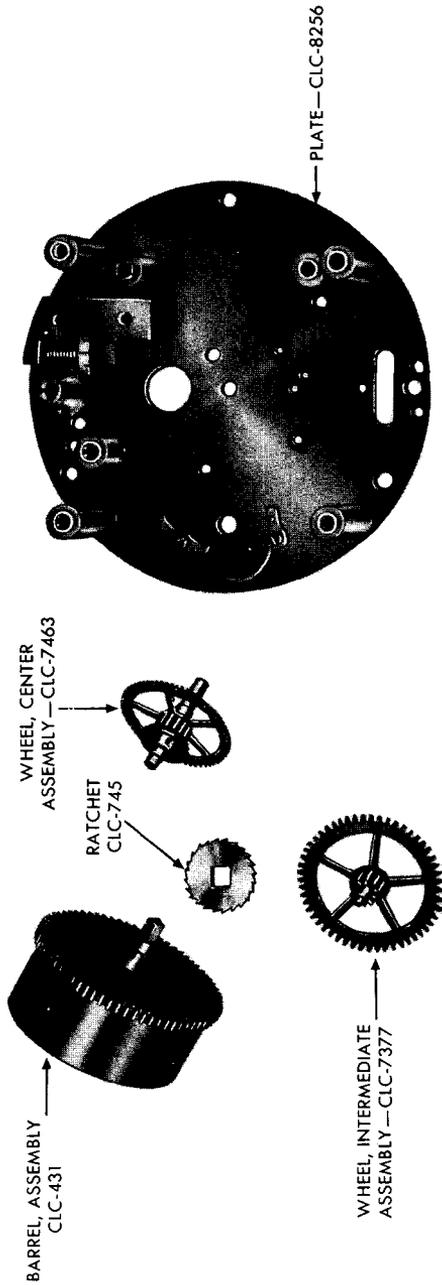


Figure 212 — Message Center Clock M1 — Center Wheel, Intermediate Wheel, Mainspring Barrel, and Ratchet Wheel Removed

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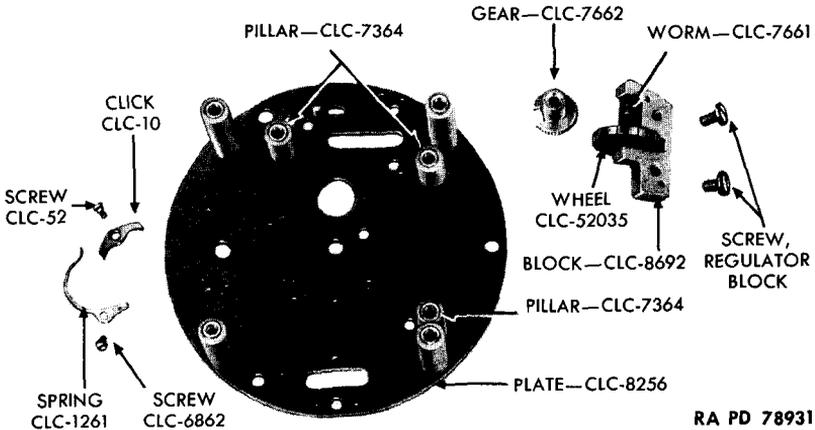


Figure 213 — Message Center Clock M1 — Regulator Index Wheel Assembly, Ratchet Wheel Click, and Click Spring Removed

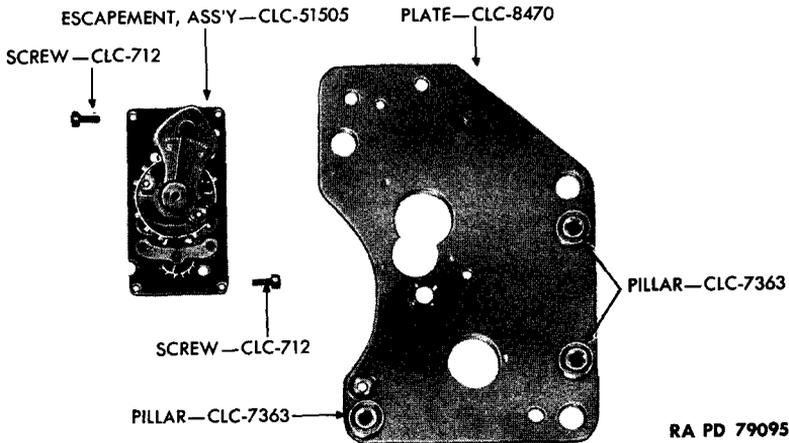
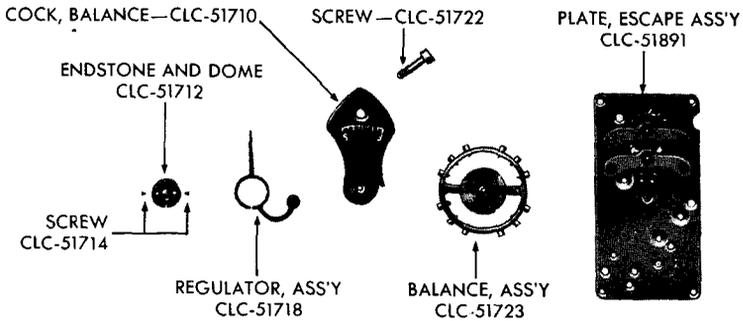


Figure 214 — Message Center Clock M1 — Escapement and Balance Assembly Removed From Train Plate

counterclockwise. Place mainspring barrel assembly in position on plate.

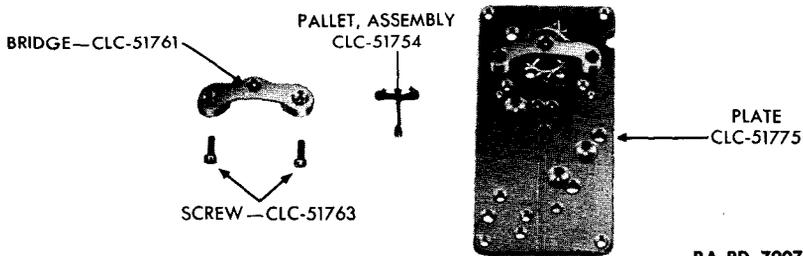
f. **Replace Escape Plate** (fig. 214). Place escape plate in position on the intermediate and fourth wheel plate and secure with escape plate screws. Place intermediate and fourth wheel plate in

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RA PD 79049

Figure 215 — Message Center Clock M1 — Balance Cock and Balance Assembly Removed



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Figure 216 — Message Center Clock M1 — Pallet Bridge and Pallet Assembly Removed

position, carefully aligning pivots of the intermediate and center wheels in their bearings, and secure plate with screws.

g. Replace Cannon Pinion. Support center wheel arbor and bushing, and center and intermediate wheel plate; press cannon pinion into place on center wheel arbor from the dial side.

h. Replace Third Wheel Assembly (fig. 211). Place the third wheel assembly in position, seating the lower pivot in its bearing in lower plate.

i. Replace Escape Wheel and Pinion Assembly. Place escape wheel and pinion in position on escape plate (fig. 217).

j. Replace Fourth Wheel Assembly (fig. 211). Insert fourth wheel pinion through center wheel arbor into its seat.

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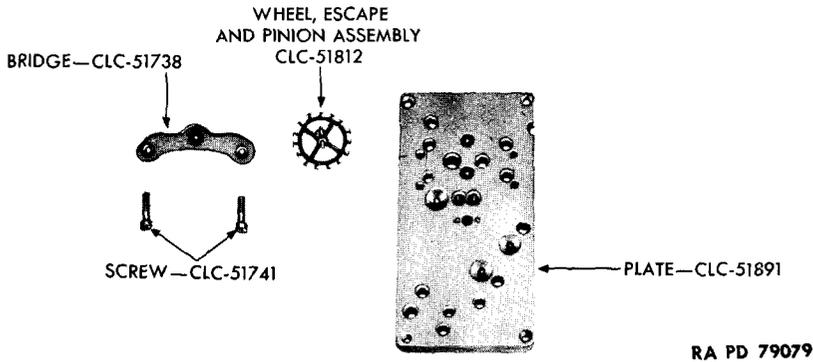


Figure 217 — Message Center Clock M1 — Escape Wheel Bridge and Escapement Removed

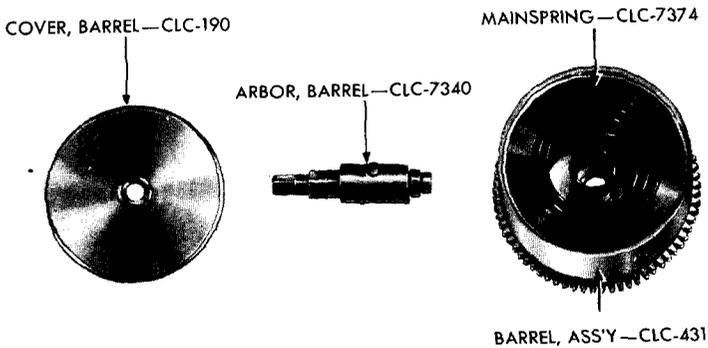


Figure 218 — Message Center Clock M1 — Mainspring Barrel Assembly Cap and Arbor Removed

k. **Replace Third and Fourth Wheel Plate** (fig. 210). Place the third and fourth wheel plate in position, aligning the pivots of the third and fourth wheels in their bearings. Secure with bridge plate screws. *NOTE: Care should be exercised not to damage the fourth wheel jewel.*

l. **Replace Escape Wheel Bridge Assembly** (fig. 217). Replace the escape wheel bridge, aligning the pivot of the escape wheel to its jewel, and secure with bridge screws. This completes the assembly of the train. At this point check freedom of the intermediate wheel to the escape wheel.

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m. Replace Pallet and Pallet Bridge Assembly (fig. 216). Replace pallet assembly. Place pallet bridge over the pallet assembly, aligning pivot of the pallet to its jewel. Secure bridge in place with screws. Check the action of the pallet.

n. Replace Balance Cock and Balance Assembly (fig. 215). Place lower balance pivot in its jewel on the escape plate assembly. Place balance cock in its place on the escape assembly plate, aligning the upper pivot to its jewel in balance cock. Aline the roller jewel to its position in the pallet assembly and secure balance cock in place with its screw. Place hairspring stud in cock and aline the overcoil of hairspring between regulator pins simultaneously. Secure hairspring stud screw. *NOTE: The hairspring must be level when stud screw is secured.*

o. Replace Regulator Staff Assembly (fig. 211). Aline regulator gear with holes in plate. Insert staff through hole in plate into gear and through lower plate. Place tension spring against staff so that gear and worm will be held in mesh. Place pollywog over regulator. Aline retaining screw hole in gear and staff and install screw.

p. Replace Back Plate (fig. 209). Aline back plate on pillars and secure with screws.

q. Replace Minute Wheel Assembly (fig. 208). Invert the movement on movement block and place minute wheel in its position between cannon pinion and setting pinion. Secure in place with minute wheel screw.

r. Replace Dial Ring Assembly (fig. 207). Place the dial ring feet through the holes in dial plate. Place a grasshopper spring on each of them on train side of dial plate, securing dial ring in place.

s. Replace Hour Wheel. Replace hour wheel on cannon pinion. Replace dial and secure with three dial screws.

t. Replace Hands (fig. 204). Place hour hand on the post of hour wheel with point at the twelfth hour. Place minute hand on cannon pinion seat with point at the twelfth hour. Place sweep seconds hand on the fourth wheel pinion with point at the twelfth hour. Turn hands through a complete revolution around dial, checking them for position at the twelfth hour. If hands do not line up properly at the twelfth hour, remove sweep seconds and minute hands and realine them.

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u. **Replace Movement in Case** (fig. 205). Carefully protect the hands and place movement in case. Aline holes in dial with holes in case. Replace the reflector, alining retaining screw holes with holes in dial and case. Secure with screws. Replace setting knob and secure retaining screw.

v. **Replace Bezel** (fig. 203). Screw the bezel into place clockwise, making sure the glass does not touch sweep seconds hand or fourth wheel pinion.

w. **Replace Clock in Mounting Case** (fig. 202). Place the clock against the mounting panel of the case, aline the screw holes, and secure with three mounting screws.