

## CHAPTER 2

## POCKET AND WRIST WATCHES

## Section I

## CHARACTERISTICS OF POCKET AND WRIST WATCHES

## 45. CHARACTERISTICS.

a. **Pocket Watches.** All pocket watches currently used are standard American manufacture, 16 size, of the open-face type, mounted in either a snap or screw back and bezel type case, or a combination of both.

b. **Wrist Watches.** Wrist watches are all standard American manufacture and are 10½ ligne, 8/0, and 6/0 size. They are all of the open-face type and are now being issued in waterproof cases.

## Section II

HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 992B

## 46. IDENTIFICATION.

a. **Hamilton Pocket Watch.** Only one Hamilton pocket watch is issued. It is 21-jewel, 16 size, Railroad grade, model 992B, with the prefix "OE" ahead of the serial number on the exterior back of the case. The case is of the screw back and bezel type; the dial is white porcelain, with black arabic numerals to indicate the hours, and small black numerals on the outer ring of the dial indicating each minute, with each 5-minute graduation indicated by a red numeral. The hour, minute, and second hands are of blued steel.

47. DISASSEMBLY OF HAMILTON POCKET WATCH, 16  
SIZE, 21-JEWEL, RAILROAD GRADE, MODEL 992B.

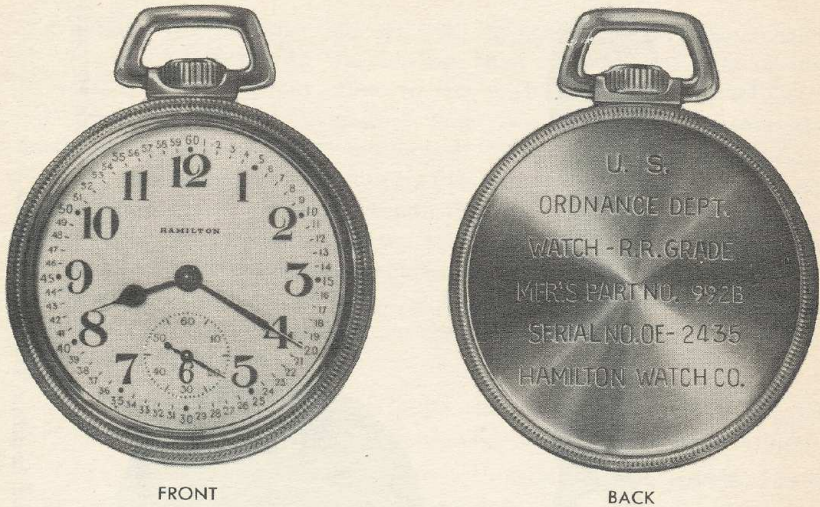
a. **Remove Rubber Shock Absorber (fig. 47).** Remove rubber shock absorber by slipping it off the watch and sliding it along the leather thong.

b. **Remove Bezel (fig. 49).** Remove bezel by unscrewing counterclockwise.

c. **Remove Hands (figs. 48 and 50).** Cut a V-slot in a piece of paper and slide it under hands to protect dial. Remove hands with hand remover.



HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 007R



FRONT

BACK

RA PD 78870

**Figure 46 – Hamilton Pocket Watch, 21-jewel, 16 Size,  
Railroad Grade – Front and Back**

**d. Remove Back Cover.** Remove the back cover by unscrewing it (fig. 51).

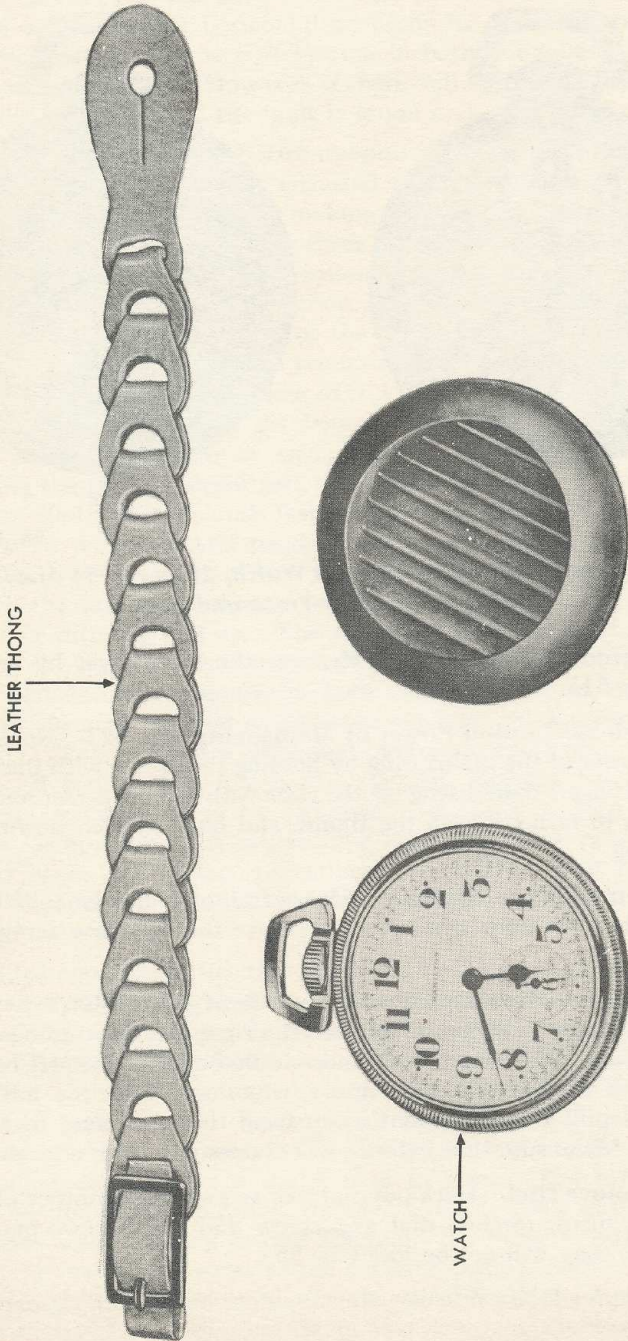
**e. Release Unused Power of Mainspring (fig. 52).** Release the unused power of the mainspring by holding the crown with the thumb and index finger; then disengage the click with a screwdriver and allow the crown to turn between the thumb and finger, which unwinds the mainspring.

**f. Remove Case Screws.** Place watch on a movement block of proper size with train side up and remove the two case screws (fig. 53).

**g. Remove Movement From Case Band Assembly (figs. 54 and 55).** Hold case band firmly between the right thumb and finger, with train side up. With the thumb and middle finger of the left hand on the contour of the case, push movement down with the left index finger and pull the movement away from the case band in a tilted position. Make sure that balance wheel does not hook on case band.

**h. Remove Dial.** Back out dial foot screws from contour of pillar plate two turns; remove dial and screw dial foot screws back into position so they will not be lost (fig. 56).

**i. Remove Hour Wheel.** Remove hour wheel with tweezers (fig. 57).



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Figure 47 — Watch With Rubber Shock Absorber and Leather Thong Removed



HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 992B

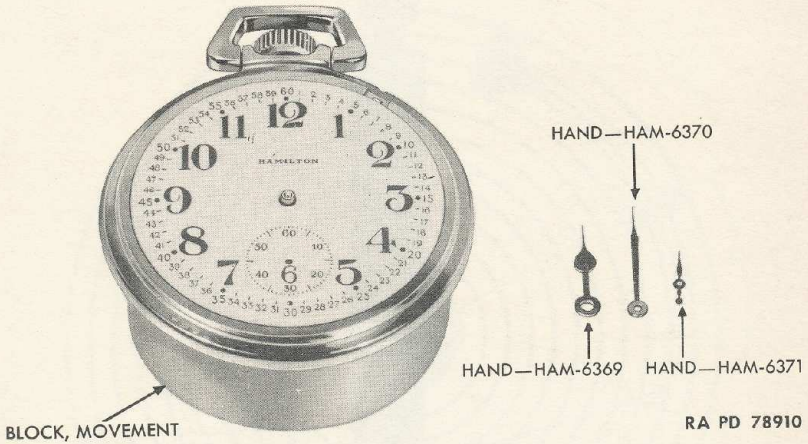


Figure 48 — Hamilton Pocket Watch — Hands Removed

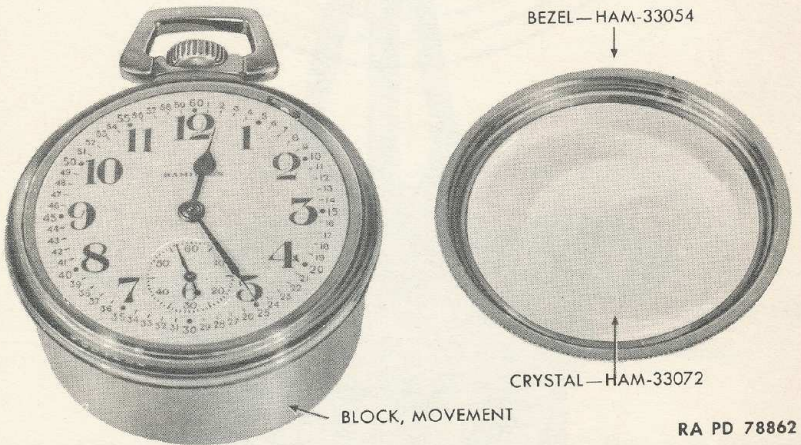
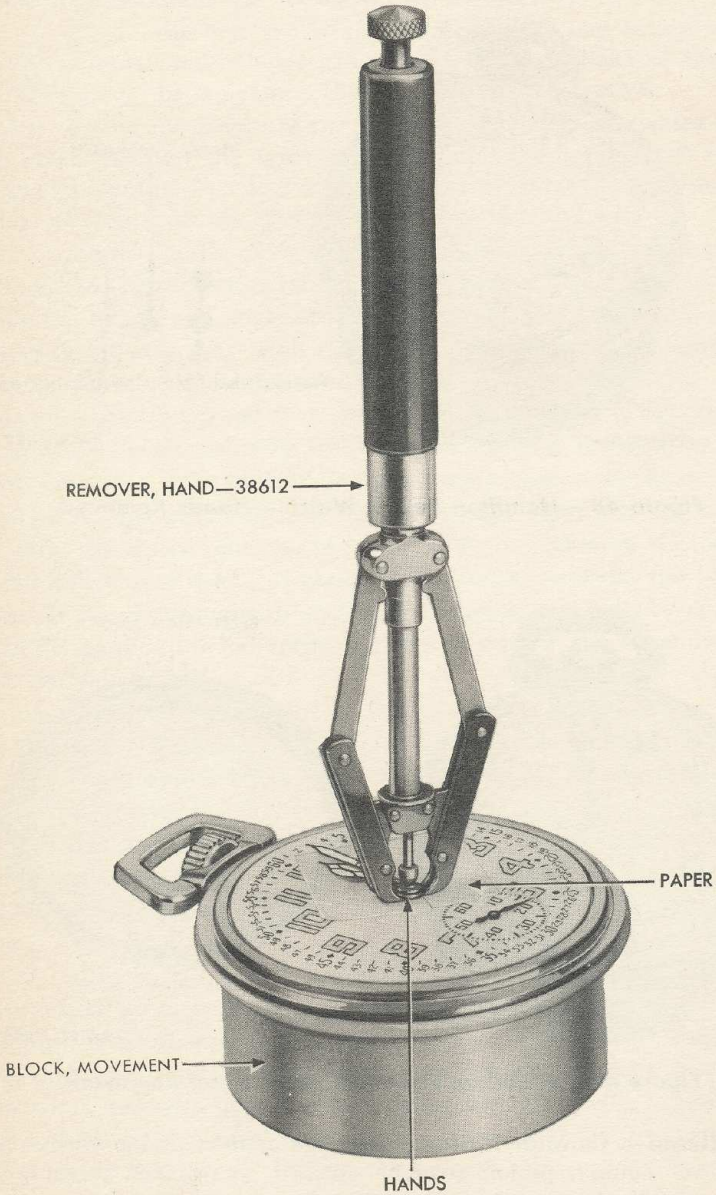


Figure 49 — Hamilton Pocket Watch — Bezel Removed

j. **Remove Cannon Pinion.** Remove cannon pinion with a pin vise. Pull cannon pinion straight upward to prevent bending or breaking center wheel arbor (fig. 58).

k. **Remove Balance Cock and Balance Assemblies** (fig. 59). Place the movement train side up on the movement block. Loosen

ORDNANCE MAINTENANCE — WRIST WATCHES, POCKET WATCHES, STOP WATCHES, AND CLOCKS

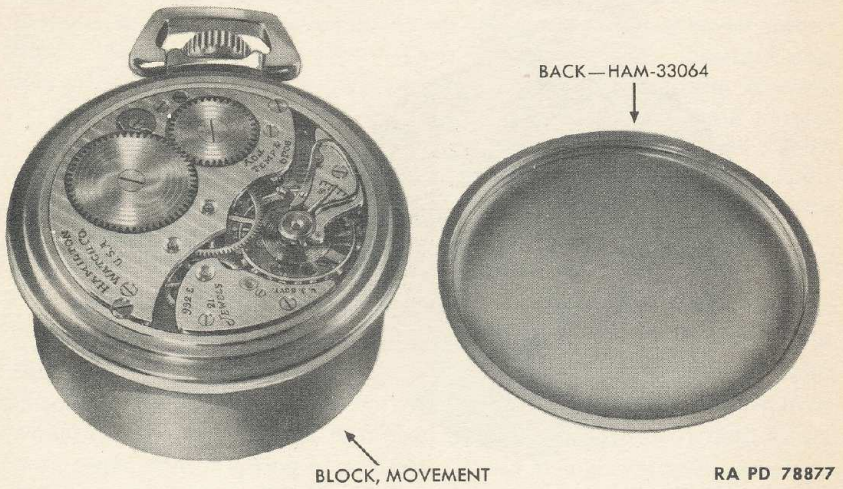


RA PD 79005

Figure 50 — Removing Hands With Hand Remover



**HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 992B**



**Figure 51 — Hamilton Pocket Watch — Back Removed**

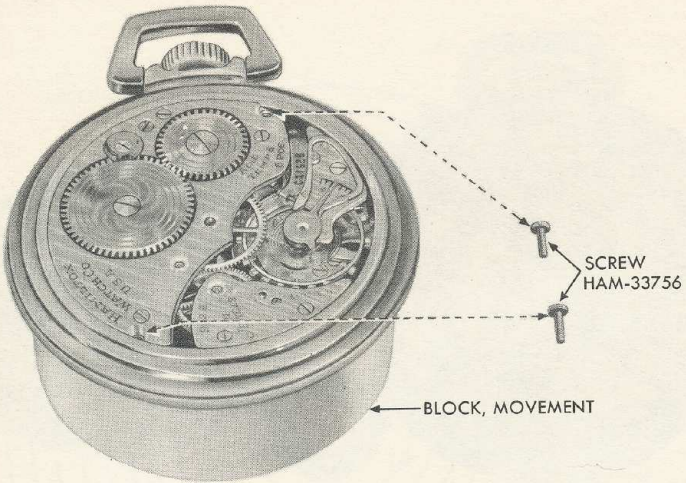


RA PD 86932

**Figure 52 — Releasing Power of Mainspring**



ORDNANCE MAINTENANCE — WRIST WATCHES, POCKET WATCHES, STOP WATCHES, AND CLOCKS



RA PD 78873

Figure 53 — Hamilton Pocket Watch — Case Screws Removed

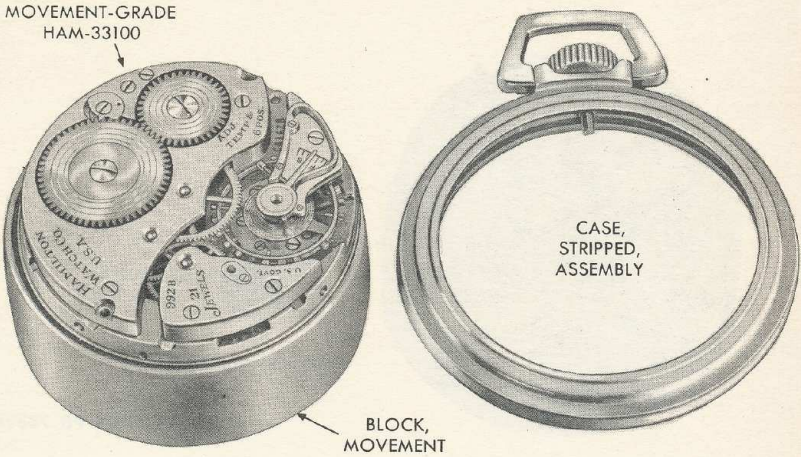


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Figure 54 — Hamilton Pocket Watch — Removing Movement From Case Band Assembly

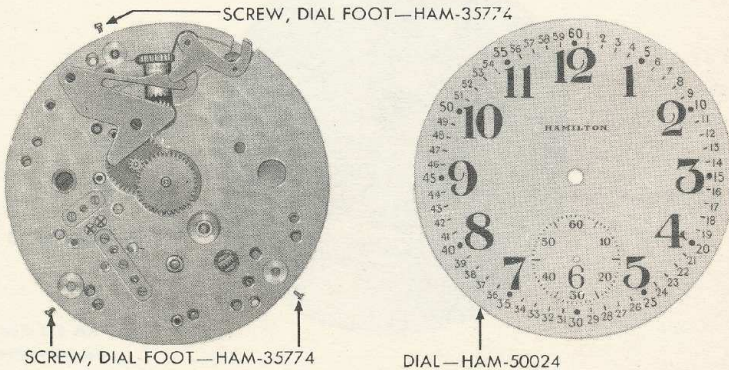


**HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 992B**



RA PD 78889

**Figure 55 – Hamilton Pocket Watch – Movement Removed From Case Band Assembly**

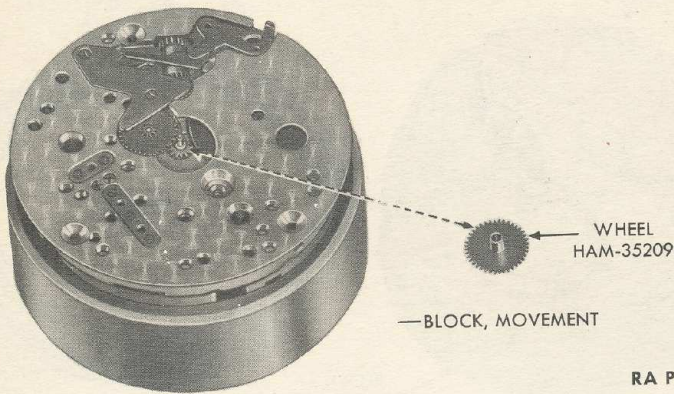


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**Figure 56 – Hamilton Pocket Watch – Dial Removed**

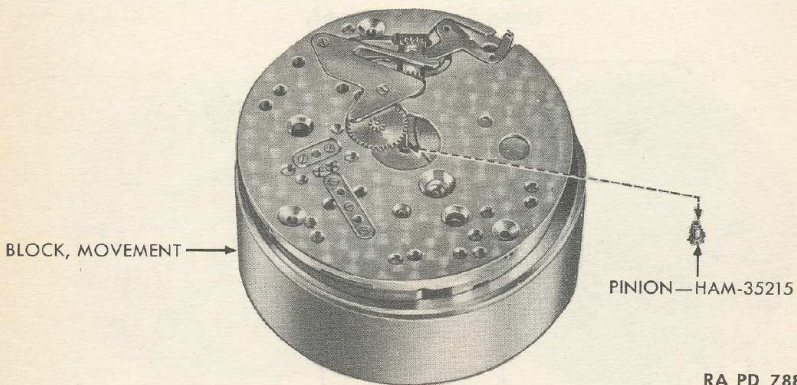
the hairspring stud screw and with the tweezers, free hairspring stud from the balance cock. Remove balance cock screw and remove balance cock. If the balance cock is tight, insert screwdriver in slot underneath the balance cock and pry it loose. Remove balance assembly with tweezers. Secure hairspring stud screw in place to avoid losing it. Remove two regulator spring screws from balance cock and remove regulator spring assembly. Invert balance cock on bench and remove two upper end stone cap assembly screws to release the end stone cap assembly and regulator assembly.





RA PD 78881

Figure 57 — Hamilton Pocket Watch — Hour Wheel Removed



RA PD 78894

Figure 58 — Hamilton Pocket Watch — Cannon Pinion Removed

l. **Remove Pallet Bridge and Pallet Assembly** (fig. 60). Remove two pallet bridge screws and remove pallet bridge assembly. Remove upper end stone pallet cap screw and remove end stone cap assembly. Remove pallet assembly with tweezers.

m. **Remove Click and Ratchet Wheel Assemblies** (fig. 61). Remove ratchet wheel click screw, ratchet wheel click, and click spring. Remove ratchet wheel screw and ratchet wheel.

n. **Remove Bridges** (fig. 64). Remove winding wheel screw, holding wheel from turning with a screwdriver. Lift off winding wheel. Remove barrel bridge screws and remove barrel bridge; if the

HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 992B

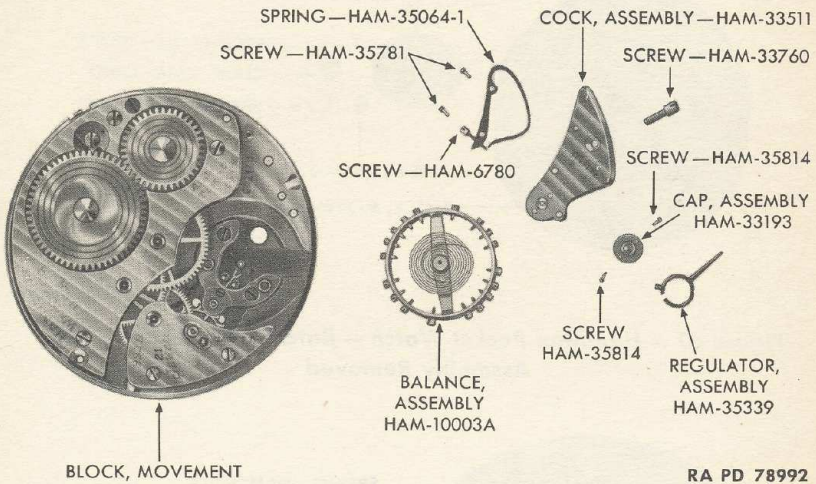


Figure 59 — Hamilton Pocket Watch — Balance Cock and Balance Assembly Removed

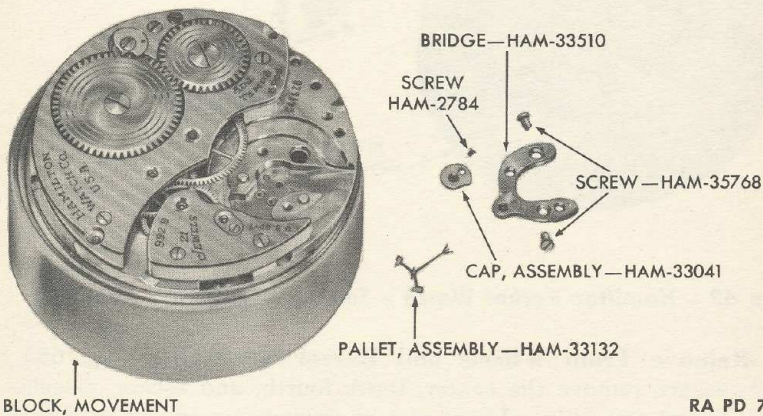
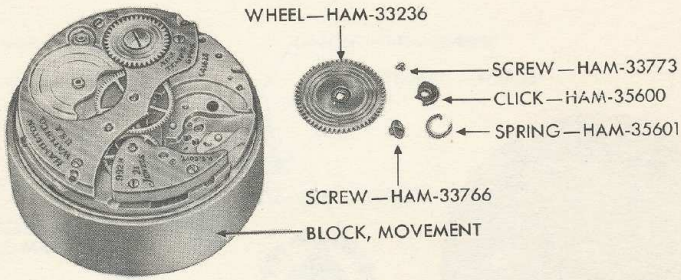


Figure 60 — Hamilton Pocket Watch — Pallet Bridge and Pallet Assembly Removed

bridge is tight, insert a screwdriver in the slots in the pillar plate and pry loose. After removing the barrel bridge, remove the lower winding wheel assembly. Remove the upper end stone cap assembly. Remove train bridge assembly screws and remove train bridge in same manner.

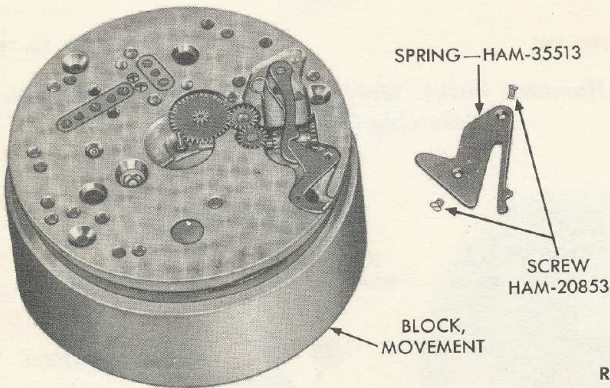


ORDNANCE MAINTENANCE — WRIST WATCHES, POCKET WATCHES, STOP WATCHES, AND CLOCKS



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Figure 61 — Hamilton Pocket Watch — Ratchet Wheel and Click Assembly Removed



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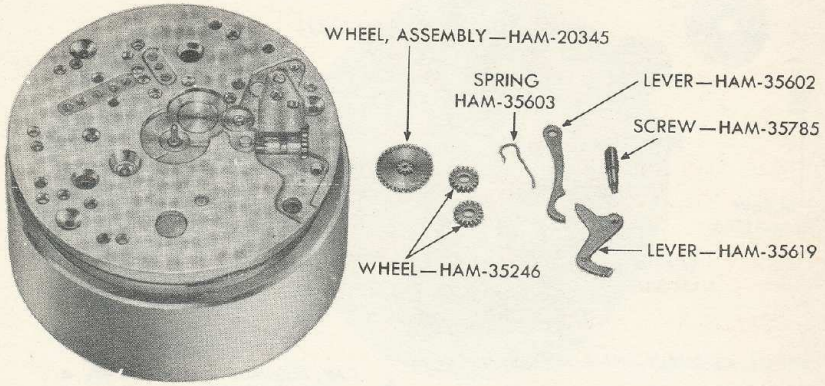
Figure 62 — Hamilton Pocket Watch — Setting Cap Spring Removed

**o. Remove Train Wheels and Barrel Assemblies (fig. 65).** Using tweezers, remove the center, third, fourth, and escape wheels. Remove barrel assembly. Insert end of screwdriver in slot of winding arbor clip, place end of index finger over clip, and lift screwdriver upward to remove clip.

**p. Remove Setting Cap Spring (fig. 62).** Remove setting cap spring screws and setting cap spring.

**q. Remove Winding and Setting Assembly (fig. 63).** Remove winding wheel by lifting off with tweezers; then remove two setting wheels. Remove clutch lever spring; in doing so, place the end of the index finger over the clutch lever stud to prevent the spring from snapping off and being lost. Remove clutch lever. Turn movement

HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 992B



RA PD 79013

**Figure 63 — Hamilton Pocket Watch — Winding and Setting Assembly Removed**

on movement block and unscrew shipper lever screw and the shipper lever will drop off.

r. **Remove Winding Arbor and End Stone Cap Assemblies** (fig. 66). Slide winding arbor off pillar plate; winding and setting clutch and winding pinion can then be removed. Remove lower balance cap assembly screws and remove the lower escape and pallet cap. This completes the disassembly of the movement, stripping it down to the pillar plate and leaving only the hole jewel assemblies and banking screws in place.

s. **Remove Mainspring From Barrel** (fig. 71). Hold the mainspring barrel between the thumb and index finger, while the barrel is supported on the anvil, and place a screwdriver of the proper size within the slot provided in the cap and pry off the cap. Remove barrel arbor, grasp the inside coil of the mainspring with tweezers, and pull it out of the barrel slowly, letting it uncoil as it comes out of the barrel. Refrain from handling mainspring with bare fingers as much as possible.

t. **Remove Stem, Crown, and Bow** (fig. 66). Grasp the square of the winding stem between the smooth portion of flat-nosed pliers and hold while the crown is unscrewed. This allows the winding stem to be pulled out of the pendant. Remove bow with bow contracting pliers only if necessary.



ORDNANCE MAINTENANCE — WRIST WATCHES, POCKET WATCHES, STOP WATCHES, AND CLOCKS

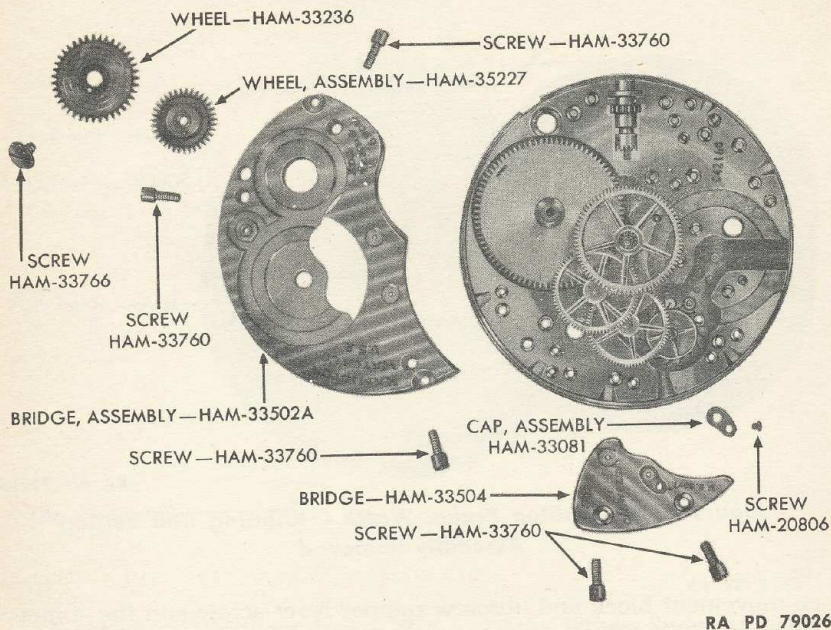


Figure 64 — Hamilton Pocket Watch — Barrel and Train Bridge Assemblies Removed

48. ASSEMBLY OF HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL, RAILROAD GRADE, MODEL 992B.

a. **Wind in Mainspring** (figs. 68, 69, and 70). Select proper mainspring winder and wind mainspring into it slowly; insert mainspring winder in barrel, hook end of mainspring on the barrel hook, and press plunger to transfer mainspring into barrel. Insert barrel arbor and replace barrel cap, snapping it into its recess.

b. **Replace Winding Arbor** (fig. 66). Place pillar plate on movement block, train side up. Assemble the winding arbor assembly by placing the winding pinion and the winding and setting clutch on winding arbor. Insert it into the pillar plate at its proper location, replace winding arbor clip, and snap it into the recess of the arbor and slot of the pillar plate. Replace lower balance pallet and escape assemblies and secure in place with cap screws.

c. **Replace Train Wheels and Barrel Assembly** (fig. 65). Place barrel assembly on the pillar plate. Replace escape, fourth, third, and center wheels.

d. **Replace Bridges** (fig. 64). Assemble the lower winding wheel and the winding wheel on the barrel bridge. Place lower winding

HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 992B

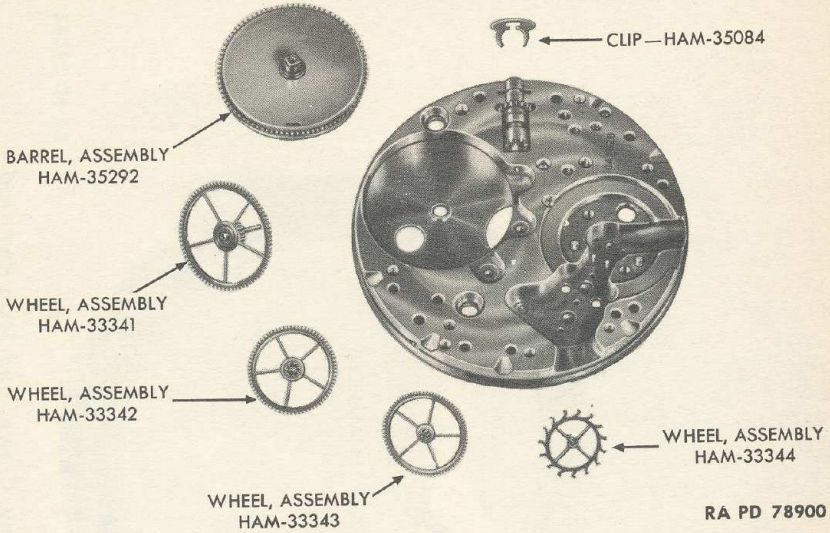


Figure 65 — Hamilton Pocket Watch — Train Wheels and Barrel  
Assembly Removed

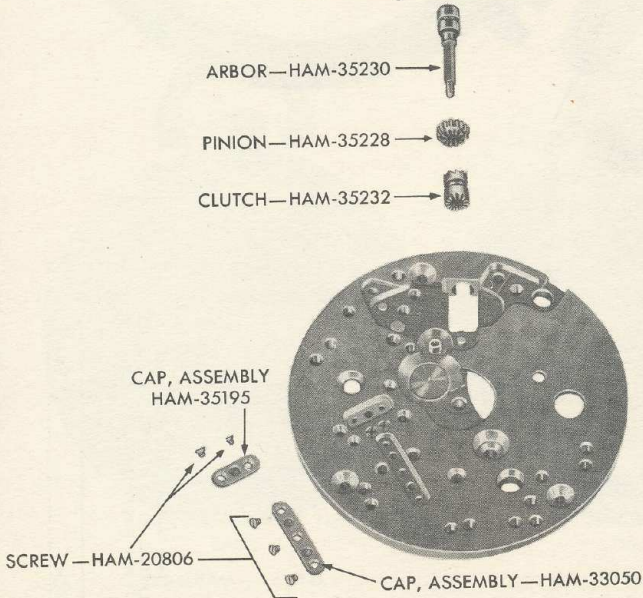
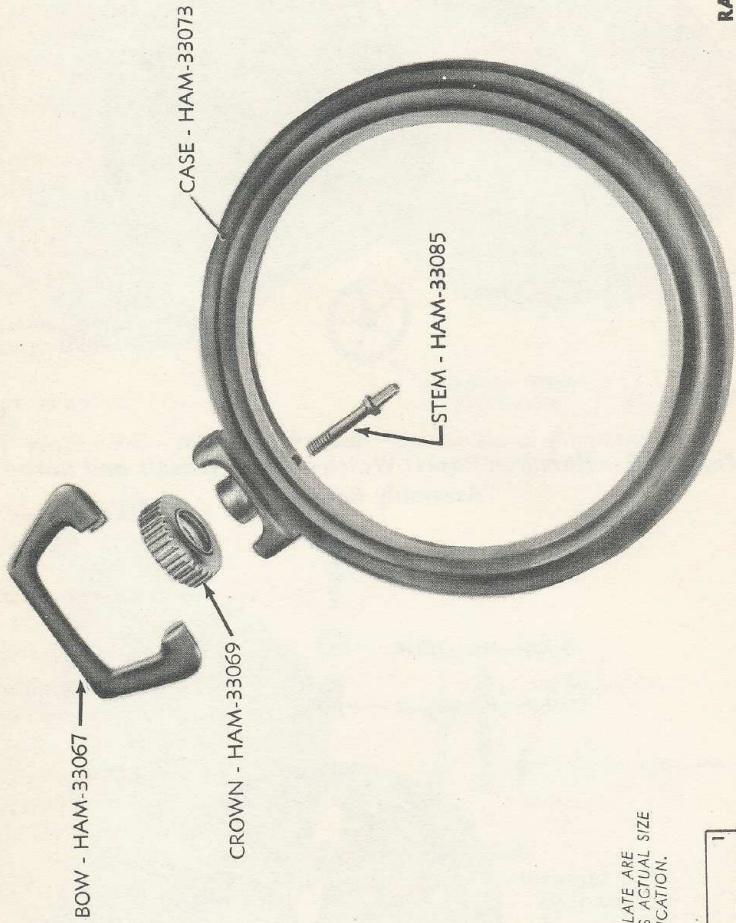
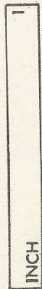


Figure 66 — Hamilton Pocket Watch — Winding Arbor and End Stone  
Cap Assembly Removed





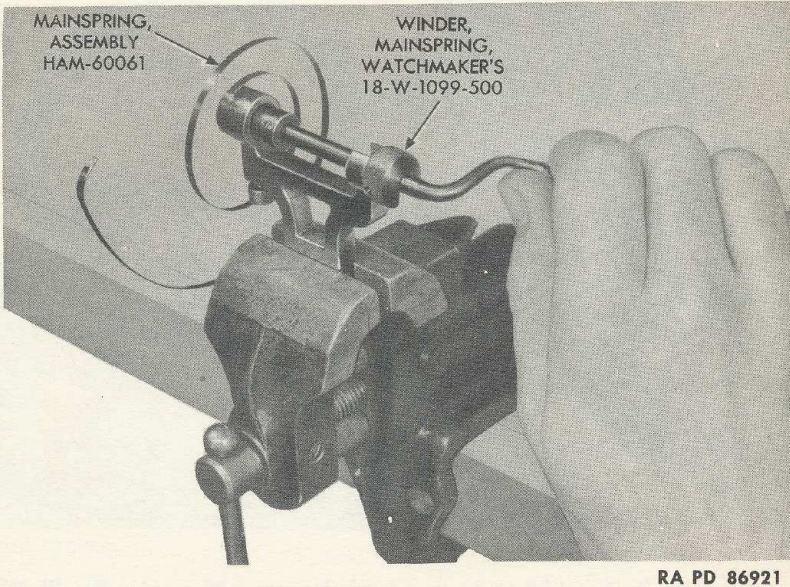
THE PARTS IN THIS PLATE ARE ENLARGED TO 1-1/2 TIMES ACTUAL SIZE FOR EASIER IDENTIFICATION.



RA PD 84362

Figure 67 — Hamilton Pocket Watch — Case With Bow, Crown, and Stem Removed

HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 992B



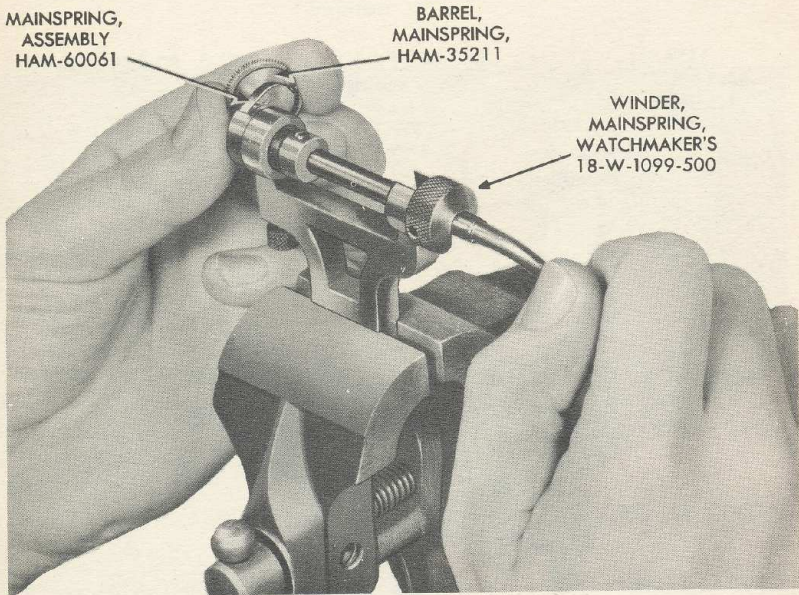
**Figure 68 – Winding Mainspring in Mainspring Barrel**

wheel underneath in its proper location. Place winding wheel on top of barrel bridge, fitting it on the stud set into the lower winding wheel. Secure upper and lower winding wheels together with winding wheel screw. Replace barrel bridge assembly, aligning the pivots of the center wheel and third wheel in their respective pivot holes. Secure barrel bridge in place with bridge screw. Replace upper escape end stone cap assembly on train bridge and secure with cap screw. Replace train bridge assembly, aligning fourth wheel and escape pivots in their respective holes, and secure bridge with bridge screws.

e. **Replace Winding and Setting Mechanism (fig. 63).** Invert the movement, placing it dial side up on the movement block. Place shipper lever in position on pillar plate. Cover end of index finger of the left hand with watchmaker's paper and hold the shipper lever in position. Grasp the movement and invert it; replace the shipper lever screw and secure. Replace movement on movement block with dial side up. Push the winding and setting clutch in toward the center of the pillar plate. Place the clutch lever on its stud on the pillar plate and align the stud under the clutch lever so that it will fall into the recess of the clutch. Replace clutch lever spring on its stud. Hold the clutch lever spring in position with one screwdriver and pull the



## ORDNANCE MAINTENANCE — WRIST WATCHES, POCKET WATCHES, STOP WATCHES, AND CLOCKS



RA PD 86923

**Figure 69 — Transferring Mainspring From Winder Into Barrel**

end of the spring back until it falls into place back of clutch lever. Place setting and minute wheels on their respective studs.

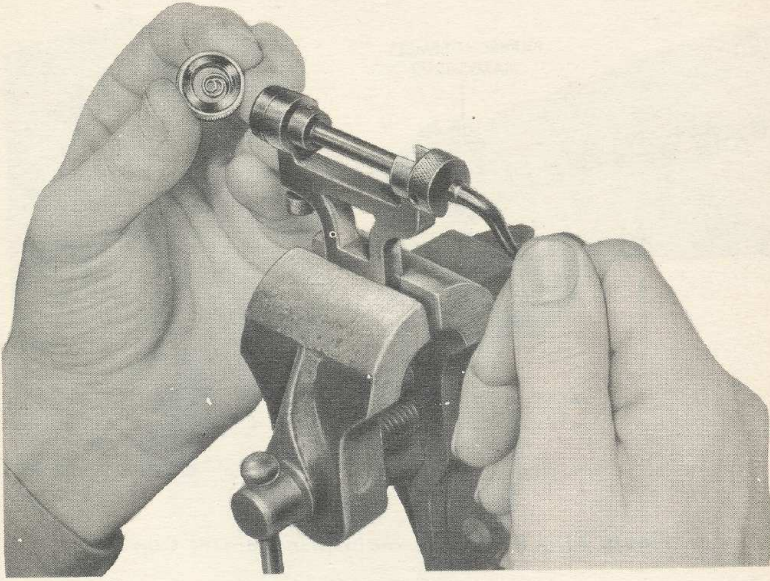
**f. Replace Setting Cap Spring (fig. 62).** Replace setting cap spring and secure in place with setting spring screws. The end of the setting spring should be held behind the shipper lever in order to hold it in setting and winding position.

**g. Replace Winding Assembly (fig. 61).** Invert movement on movement block and replace click spring, allowing it to rest in the hole in the pillar plate. Place click over its stud, with bent end of click spring resting in the hole in click. Replace click screw and secure. Replace ratchet wheel, fitting it on the square of the mainspring barrel arbor. Replace screw and secure. At this point, an examination must be made to check freedom of the train. Do this by winding the mainspring one full turn with the key winder; if wheels of train backlash on reaching the end of the winding, the train has perfect freedom. If they stop abruptly or slow down and gradually stop, a bind exists and must be corrected.

**h. Replace Pallet and Pallet Bridge (fig. 60).** Replace pallet assembly. Replace upper pallet end stone cap assembly on pallet bridge and secure in place with cap screw. Replace bridge and care-



HAMILTON POCKET WATCH, 16 SIZE, 21-JEWEL,  
RAILROAD GRADE, MODEL 992B



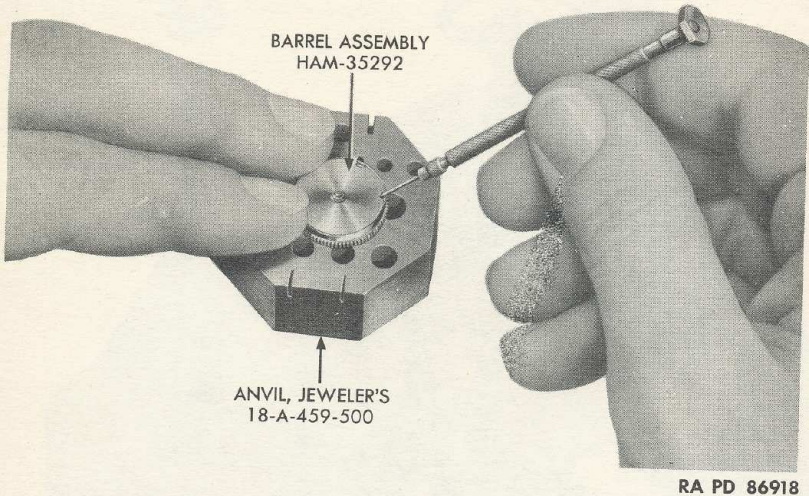
RA PD 86925

**Figure 70 – Mainspring Wound in Barrel**

fully aline the pallet arbor pivot in its hole. Replace pallet bridge screws and secure. Check freedom of the pallet assembly. **NOTE:** *The action of the pallet and escape wheel must be checked by winding the mainspring two turns.*

**i. Replace Balance and Balance Cock (fig. 59).** Place upper end stone cap assembly on bench with polished surface down. Invert the balance cock and place it on end stone cap assembly. Aline the screw holes, replace end stone cap assembly screws, and secure. **NOTE:** *Upper end stone assembly cap screws have highly polished ends.* Invert the balance cock. Replace regulator assembly, allowing it to snap in place around the end stone cap assembly. Replace regulator spring assembly, with the spring on one side of the regulator, and the regulator spring regulating screw on the other side resting against the regulator. Invert the balance cock and loosen the hairspring stud screw. Grasp the balance wheel assembly with tweezers and insert hairspring stud in hole in balance cock, allowing the overcoil of the hairspring to be placed between the regulator pins simultaneously. Secure hairspring stud screw. Grasp balance cock assembly with tweezers and invert carefully in order not to distort the hairspring. Place balance wheel under the center wheel, engaging roller





RA PD 86918

**Figure 71 — Removing Mainspring Barrel Cap**

jewel pin in slot of pallet fork, and cautiously set balance cock in place. Replace balance cock screw and secure.

**j. Replace Cannon Pinion** (fig. 58). Replace cannon pinion.

**k. Replace Hour Wheel** (fig. 57). Replace movement on movement block, dial side up. Replace hour wheel with tweezers, engaging teeth with the minute wheel pinion.

**l. Replace Dial** (fig. 56). Back dial foot screws out three turns and replace dial, securing it in place by tightening the foot screws.

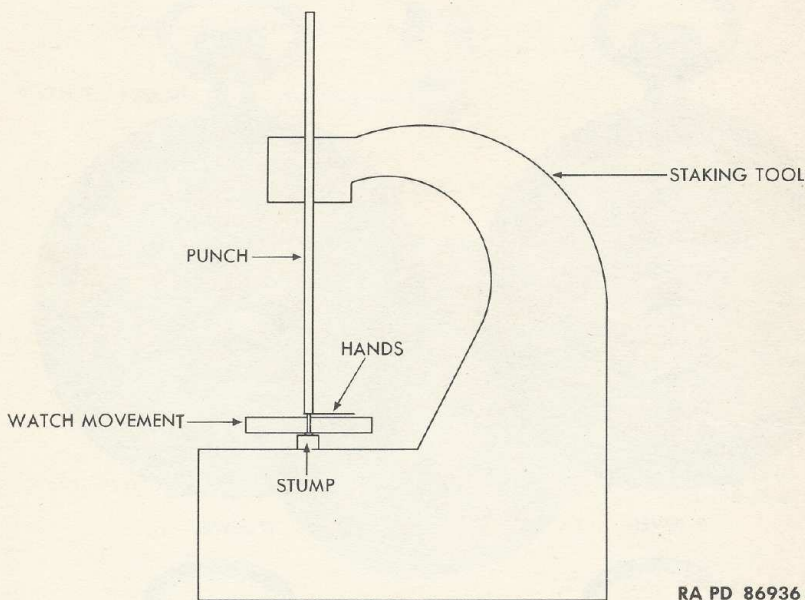
**m. Replace Stem and Crown** (fig. 67). Insert the stem in pendant from the inside of case band. Hold square of stem between smooth portion of flat-nosed pliers and screw on crown securely.

**n. Replace Movement in Case Band** (fig. 54). Grasp case band by the pendant. With the dial side up, hold movement in a tilted position, allowing the stem to enter the winding arbor. Lower the movement into the case band, being careful not to hook the balance wheel on the case band as it is seated in place.

**o. Replace Case Screws** (fig. 53). Replace case screws and secure. Before tightening case screws, make sure that movement is centered and no binding exists in the stem.

**p. Replace Hands** (fig. 70). Replace seconds hand; replace hour hand with the point at the twelfth hour and the minute hand in the same manner.

**ELGIN POCKET WATCH, 16 SIZE, 7- OR 17-JEWEL**



RA PD 86936

**Figure 72 – Replacing Hands, Using Staking Tool**

- q. **Replace Case Back.** Replace back of case and screw into place.
- r. **Replace Bezel.** Replace bezel and screw into place.
- s. **Replace Rubber Shock Absorber.** Slide shock absorber over leather thong and replace on watch by inserting the pendant in the slot and sliding the shock absorber over the case.

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**Section III**

**ELGIN POCKET WATCH, 16 SIZE, 7- OR 17-JEWEL**

**49. IDENTIFICATION.**

a. **Elgin Pocket Watches.** There are two models used, the 7-jewel and the 17-jewel. Both watches are 16 size, mounted in a combination case with a hinged snap type back and snap bezel. The 7-jewel watch has the prefix "OA" before the serial number and the 17-jewel has the prefix "OC." Both watches have porcelain dials with the hour graduations outlined in black and filled with radium luminous material. The dial of the 7-jewel watch has red arabic numerals on