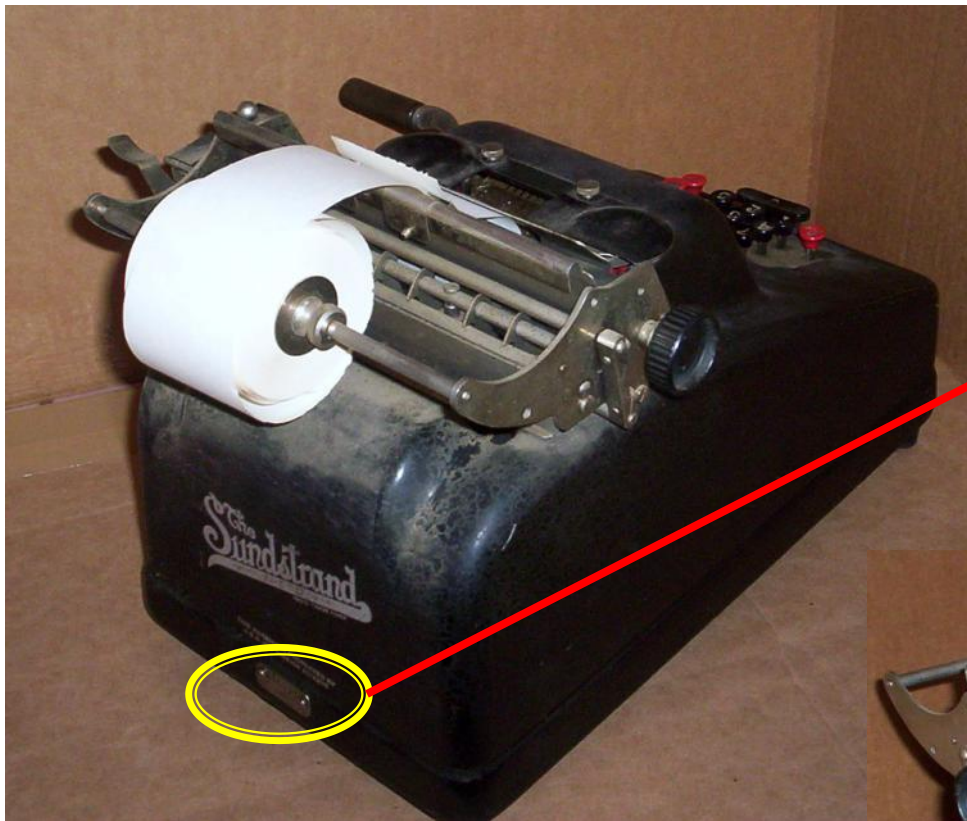


Livermore Heritage Guild's 1923 Sundstrand Adding Machine



Rev. E - 4/24/2014
Harry Briley

Disassembly for Cleaning



Serial # 156198

Model# 8020-A-52

- The “A” refers to the simplest keypad that only Adds and Subtracts.
- The “Subtract” key appeared in 1923 and the case style changed soon.
- The serial# thus dates to: 1923-1929

- This machine did not operate in September 2013 and had not been oiled for 80 years.
- It is **easy** to maintain. This slideshow shows specific steps needed for cleaning.





Simple Tools for Cleaning:

For Refurbishing:

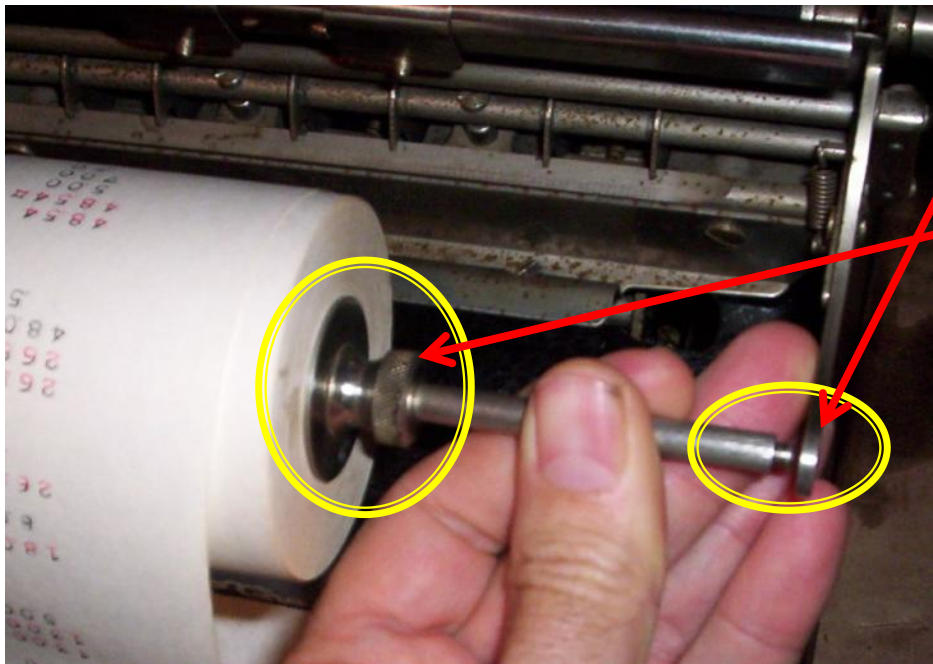
- White Grease
- WD-40 Solvent

For Maintenance:

- 10W-30 Oil (not Pennzoil)
- FLAT Screwdrivers, one with a screw-holder feature
- Large Magnet to hold screws
- Cardboard mat to catch oil

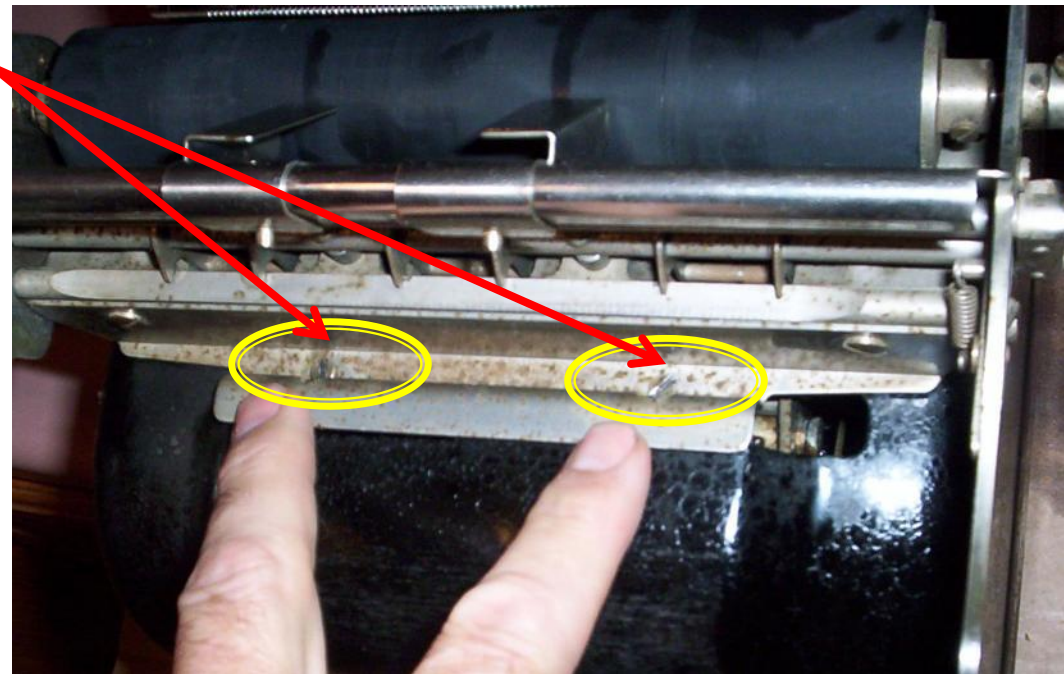
Replaced Rubber Feet

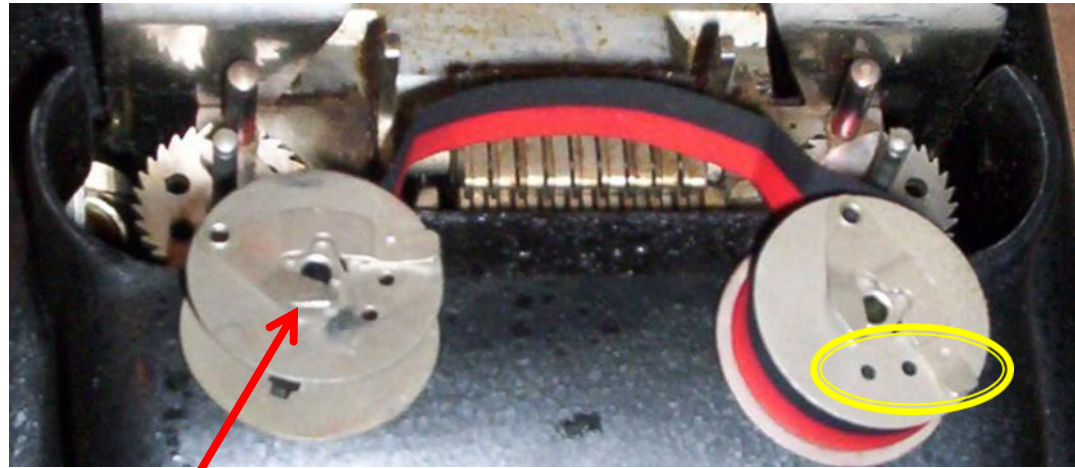
- Bolt, Bumper, Washer, Nut
- Drill bolt-sized hole through a round white rubber bumper



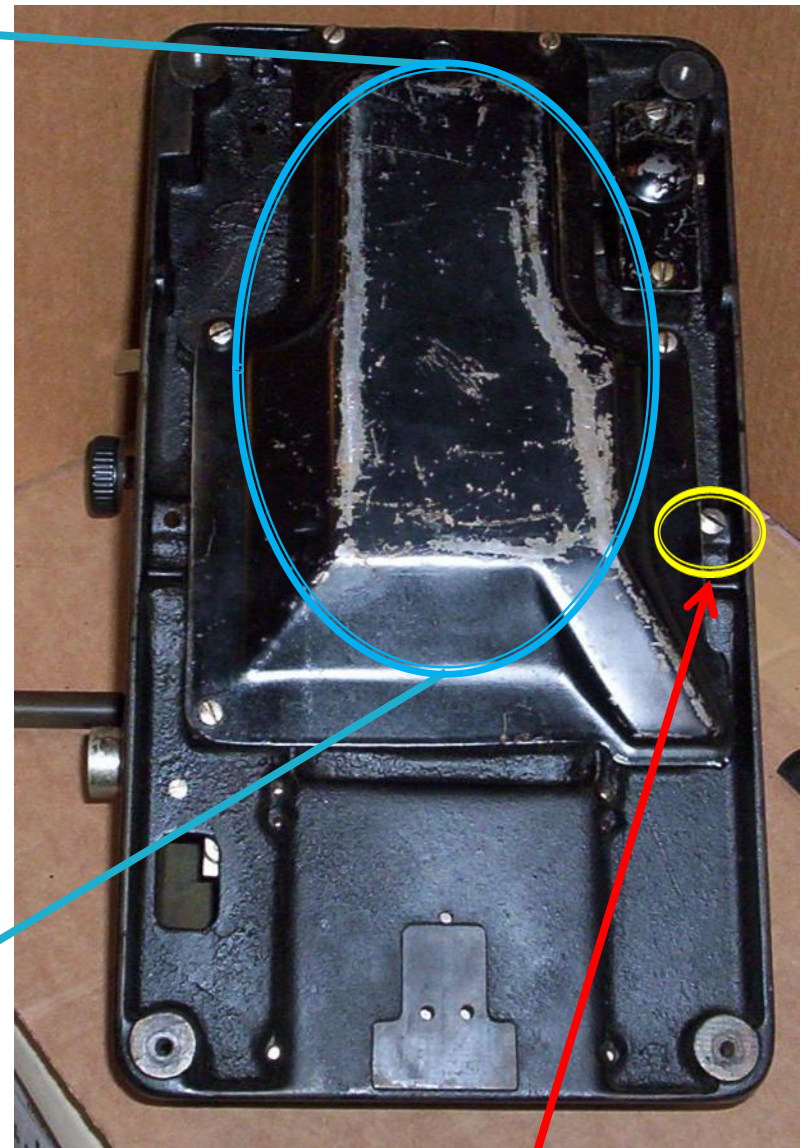
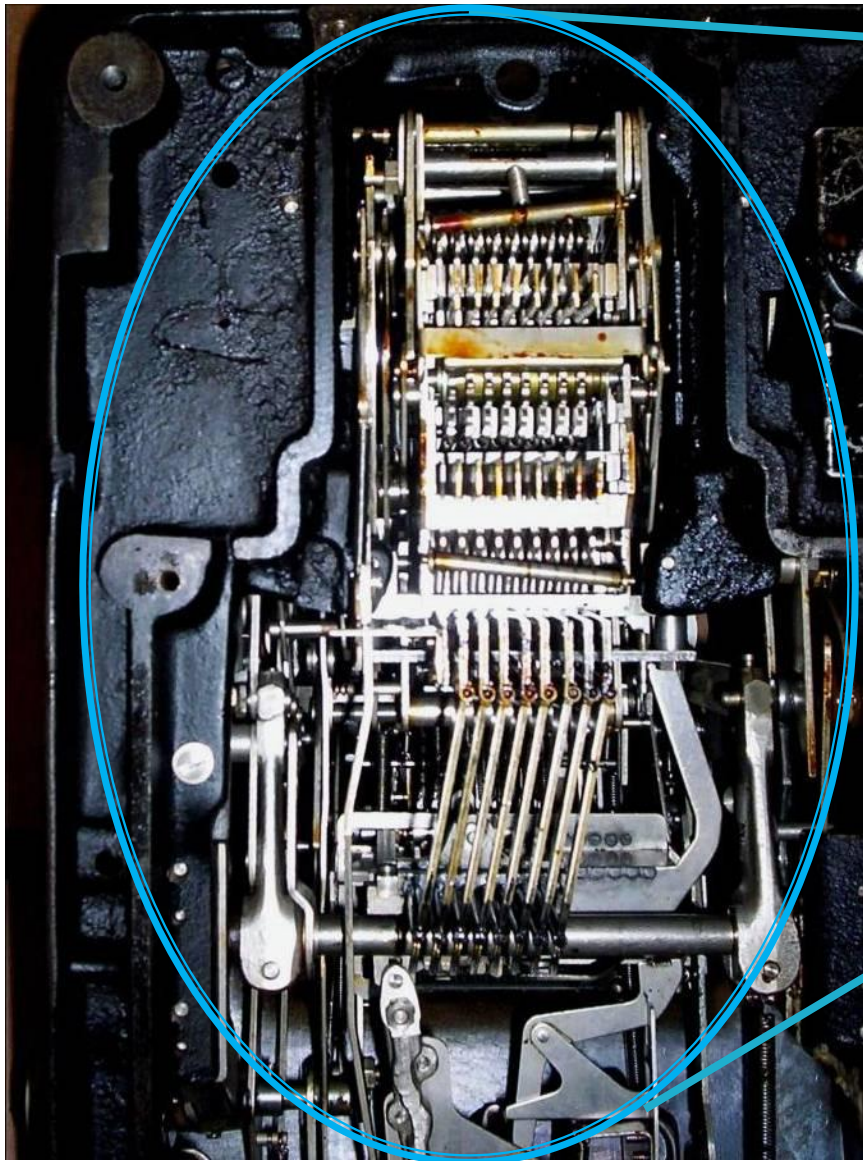
- Remove the paper spool rod (held by **spring-tension**).
- The paper spool has two **friction-slider** end-caps.
- Pull out caps and grease rod lightly to easily adjust end-caps.
- Replace spool and end-caps.
- Set aside.

- Remove **TWO** carriage screws in the trough behind carriage
- If functioning, pull handle back
- Lift carriage up and towards back of machine
- Do **NOT** immerse but wash unit with dish soap and water
- Rinse, pat, and let dry
- Roughen up roller by rubbing lightly with 90% isopropyl

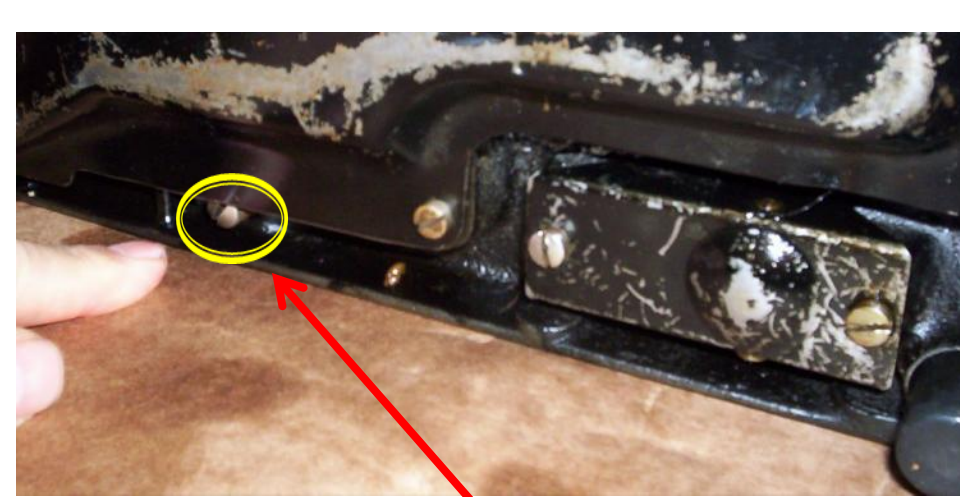




- Push/slide the clips that hold the ribbon spools. There are THREE adjustment holes on each spool.
- The middle of three locks to spindle.
- The one to its left is open position.
- The one to the right is useless. 😊

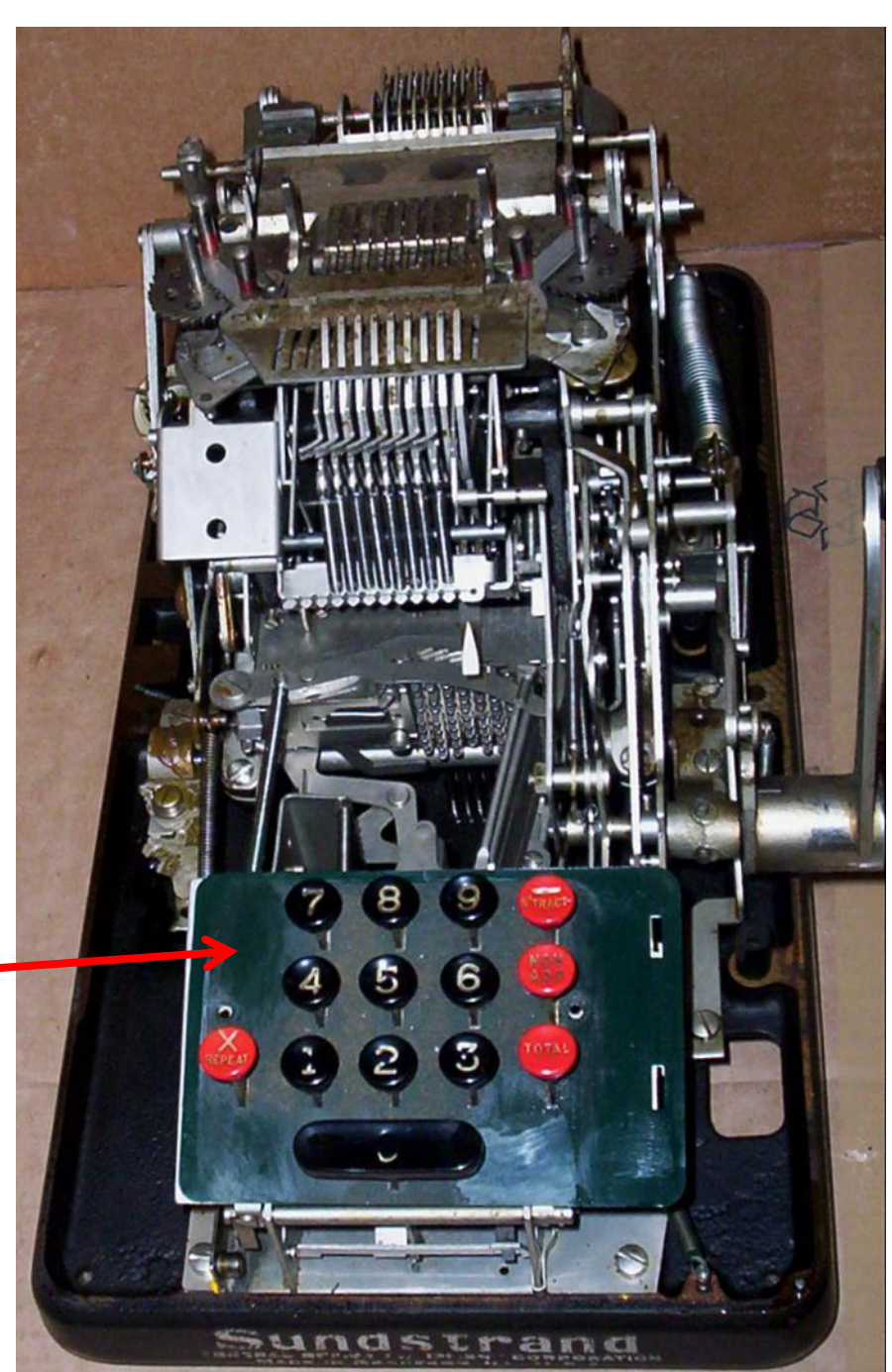


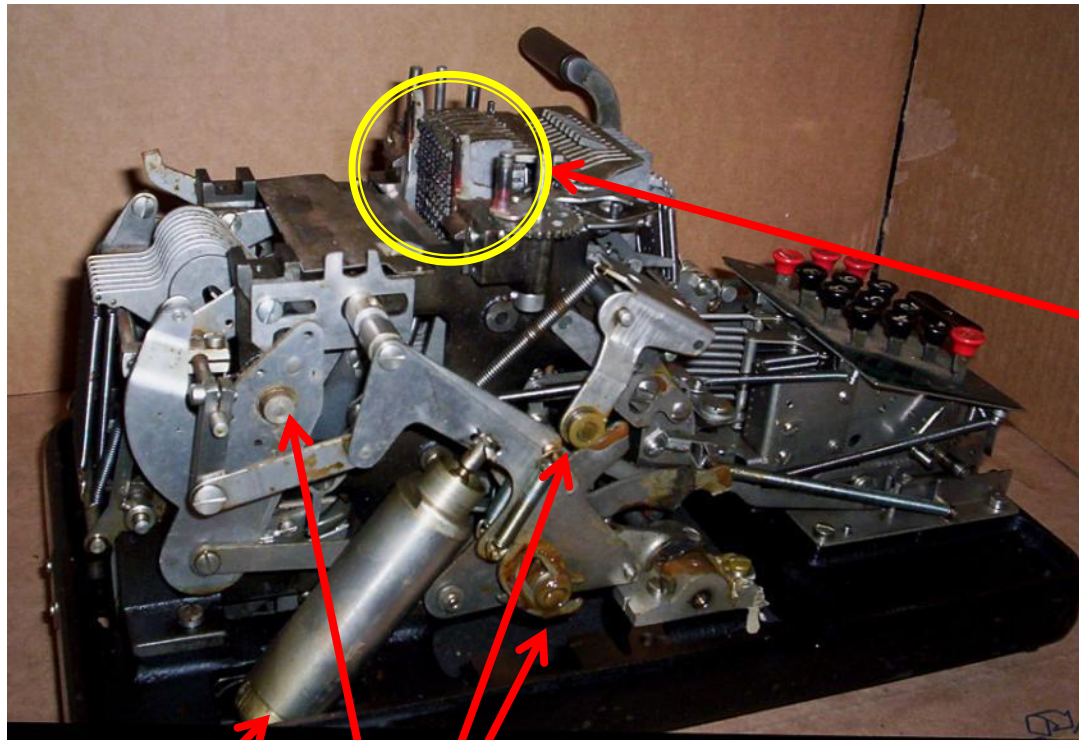
- Leave the oil pan alone.
- Remove the SINGLE case hold-down screw.



- After removing SINGLE case hold-down screw, turn unit back on its base
- Lift the case shell up and off.
- Do NOT immerse, but wash shell with dish soap and water, avoiding back of glass plate. Do not scrub the insignia.
- Rinse, pat, and let dry.

- Do NOT remove red buttons (tiny machine screws) unless decorative green keypad is as grungy as 2013.





Assist piston

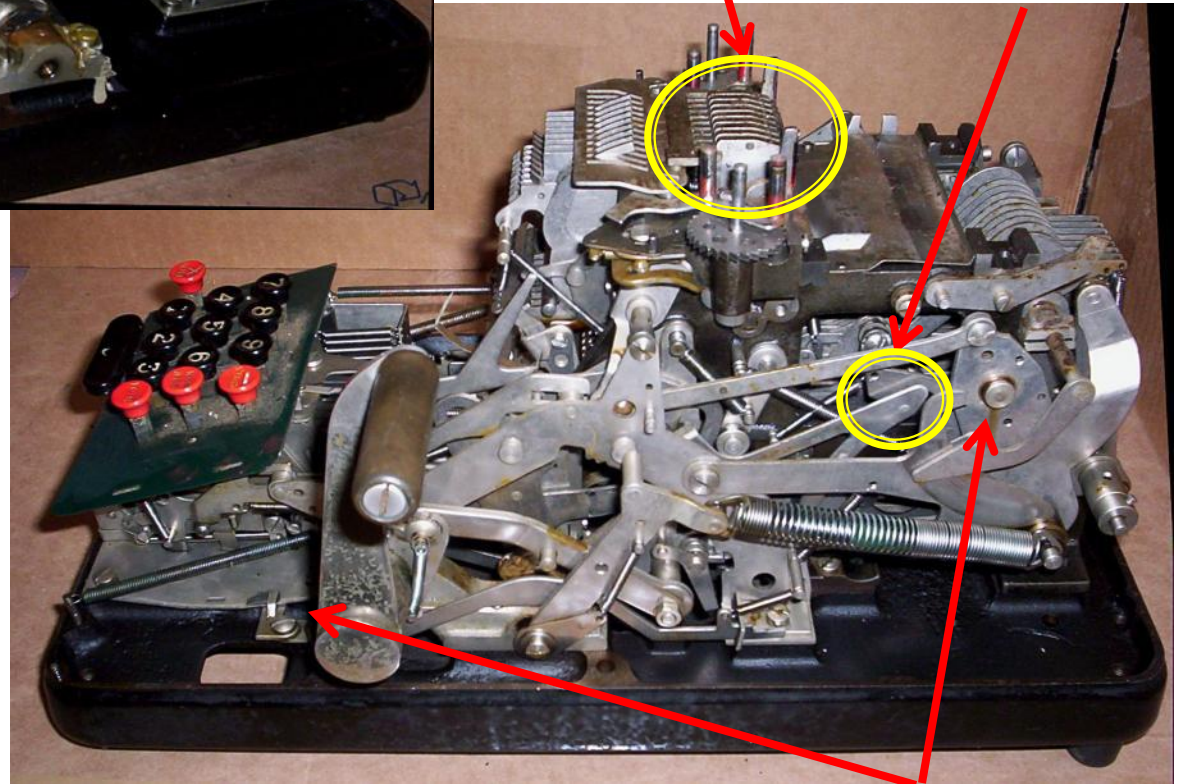
White grease on large "rollers"

Disassembly is done.

- Drop of motor oil on pivots
- Loose sliders need no oil

These Digit Casings need tender care. Discussed later.

A catch lever affects subtotal



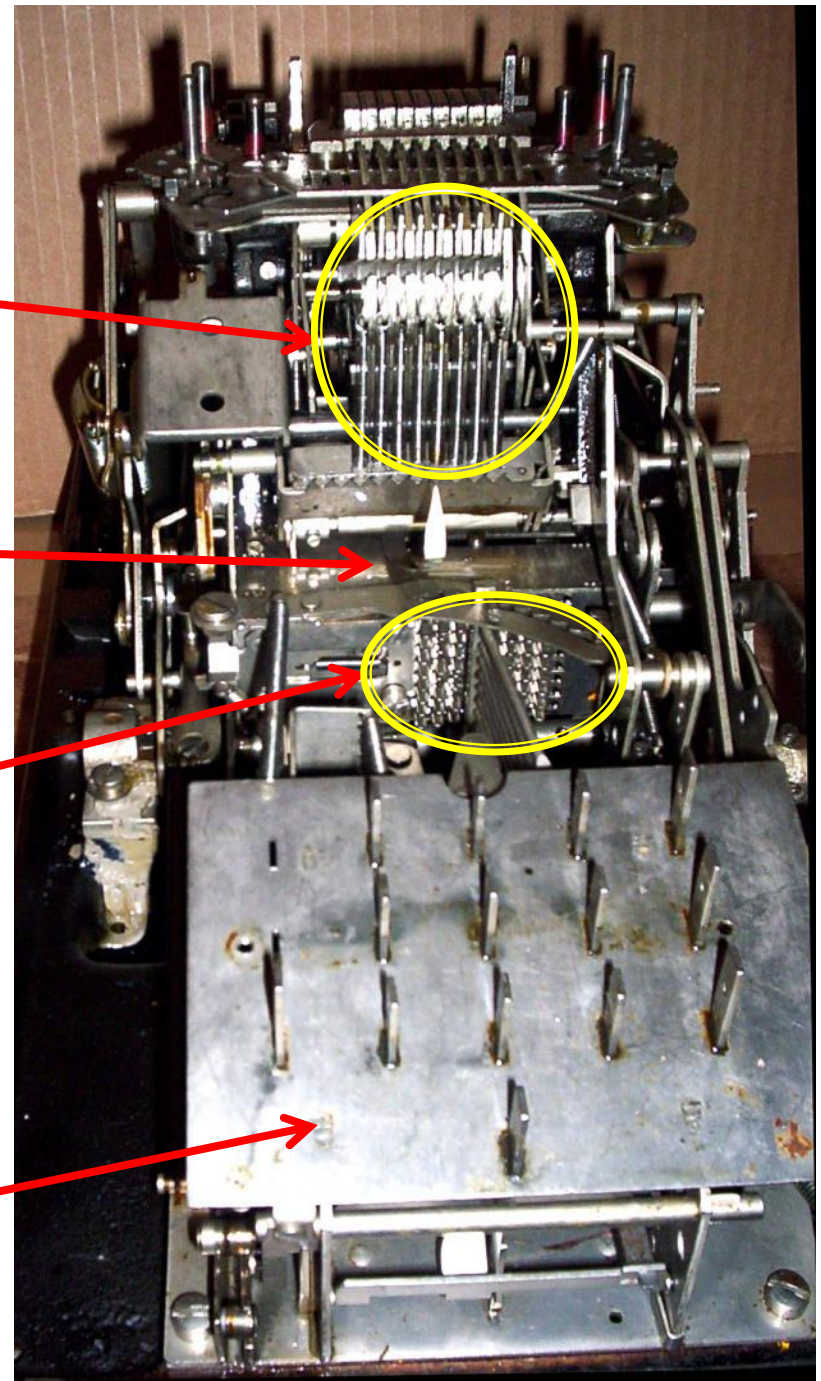
White grease

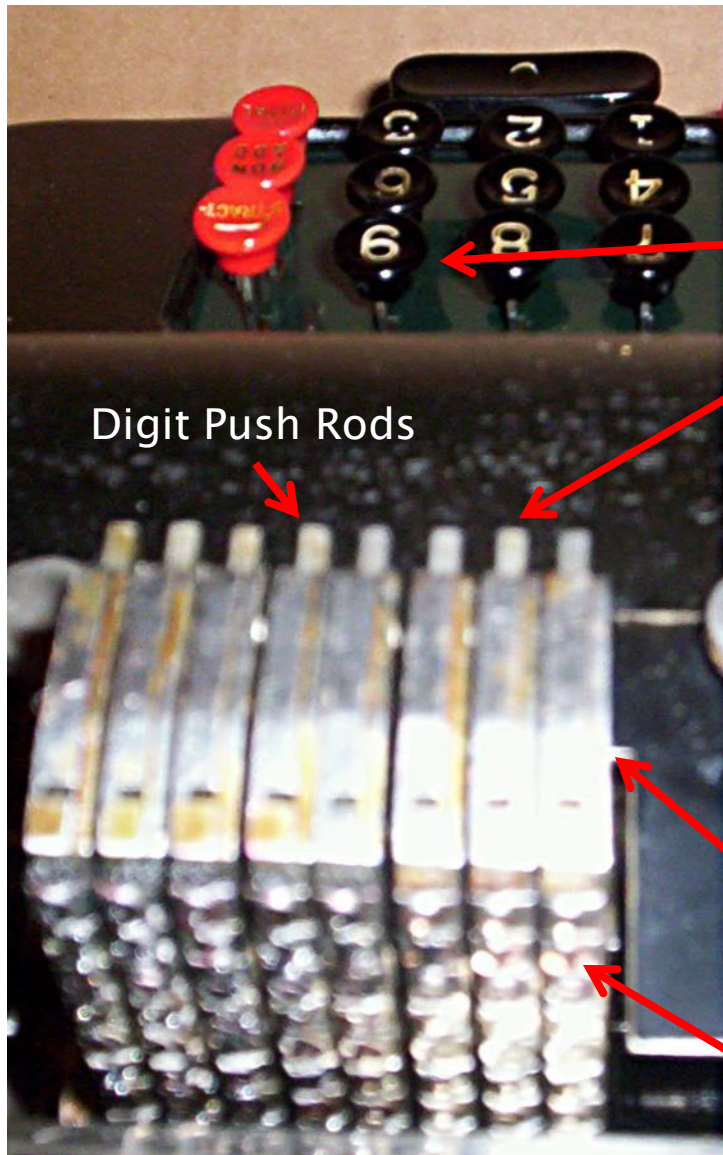
Spray with WD-40

Grand Total Accumulator
is hidden behind here.

Caution: When entering a number,
ALL of these must be poking out
towards keypad. If you accidentally
push several in, the keypad will JAM.

See! Nothing is under
the decorative keypad.



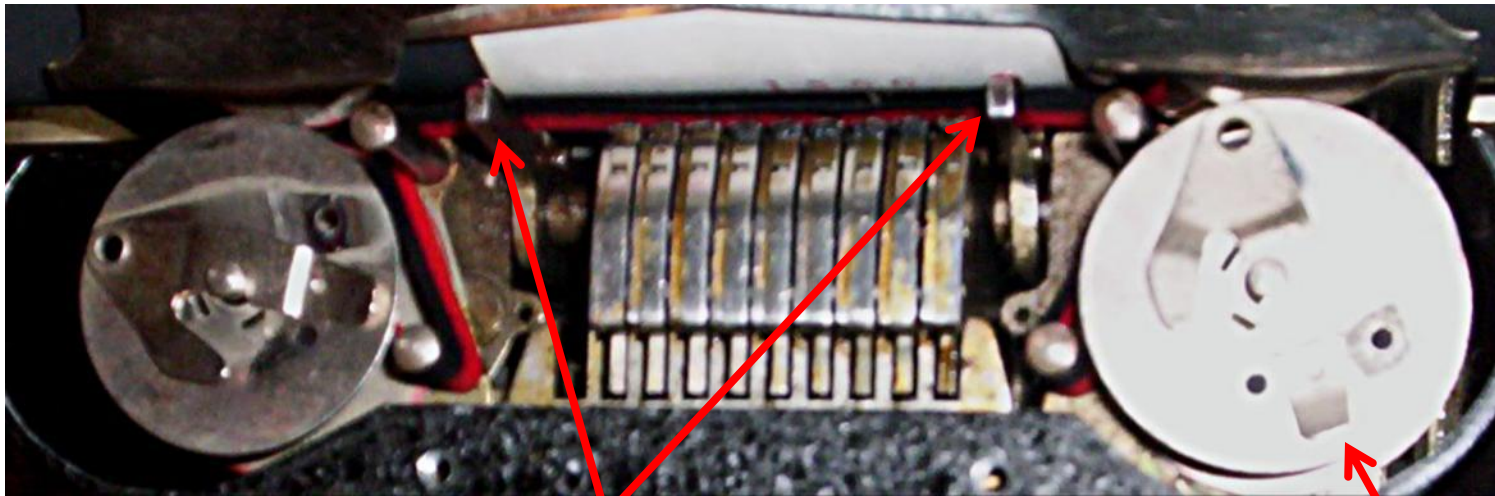


Inspect the digit casings annually.

- If a push rod sticks, it will jam in the out position and/or not budge at all.
- Type in 99999999 and pull the lever back to fully raise the Digit Casings.
- Gently **hand-push** every push rod.
- Apply WD-40 and oil **until** all 10 digits in all eight casings operate **by hand**.
- THEN, Press 11111111 and pull lever back. Oil that row while poking out. Cycle. Repeat for the other 9 digits.
- **ALERT:** Pull the crank slowly and release slowly. Do not fire a push rod out of its digit casing! (It is well built but the user manual warns of this rare case.)

Each Digit Casing holds 10 digits

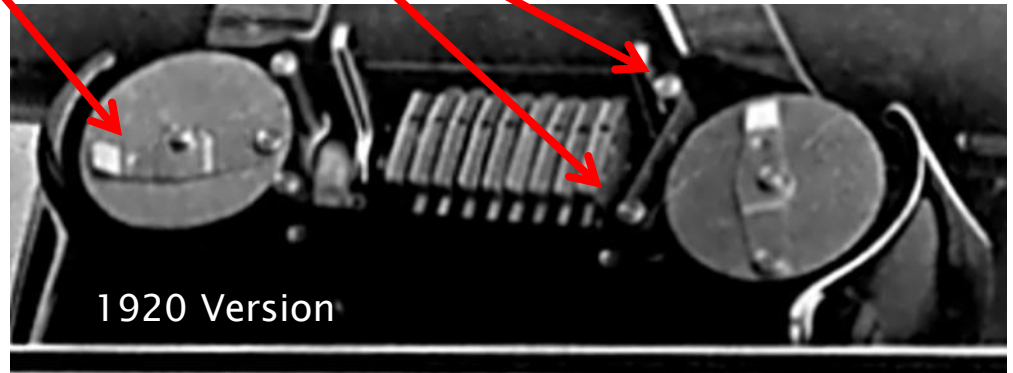
Digit Type face on end of push rod



- Install ribbon **within** lifter tines, NOT in front.
- Feed the ribbon around the pins one spool at a time.
- The pins activate the AUTO-REVERSE feature.
- Push/Slide Spool latch to center hole

Latch spool to spindle

- Reinstall Shell casing
- Secure with Hold-Down Screw
- Re-install the Ribbon Spools
- Latch spools to spindles
- Reattach spool dust cover



*Illustrating correct method of putting new ribbon
with new style ribbon spool top.*

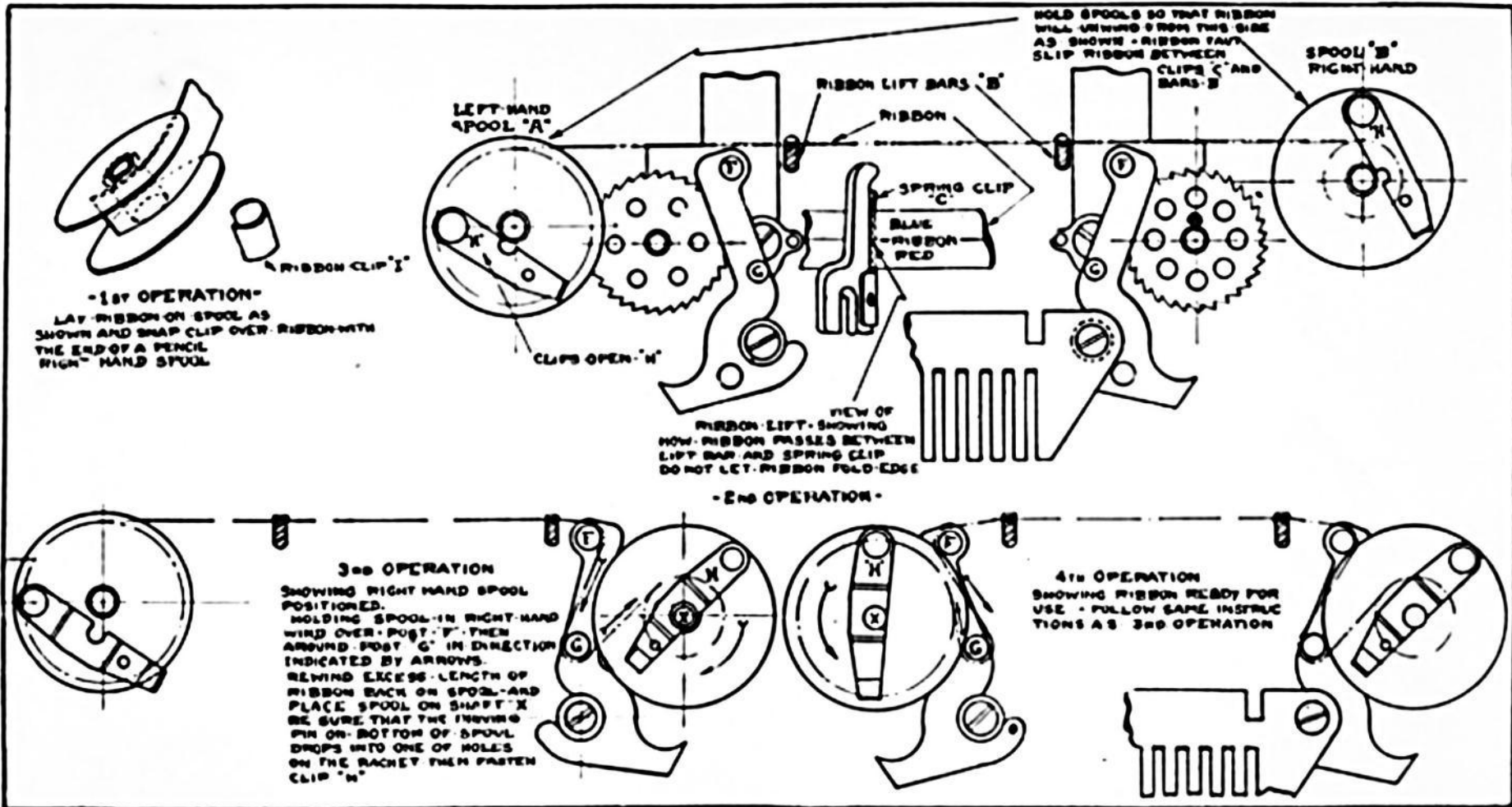
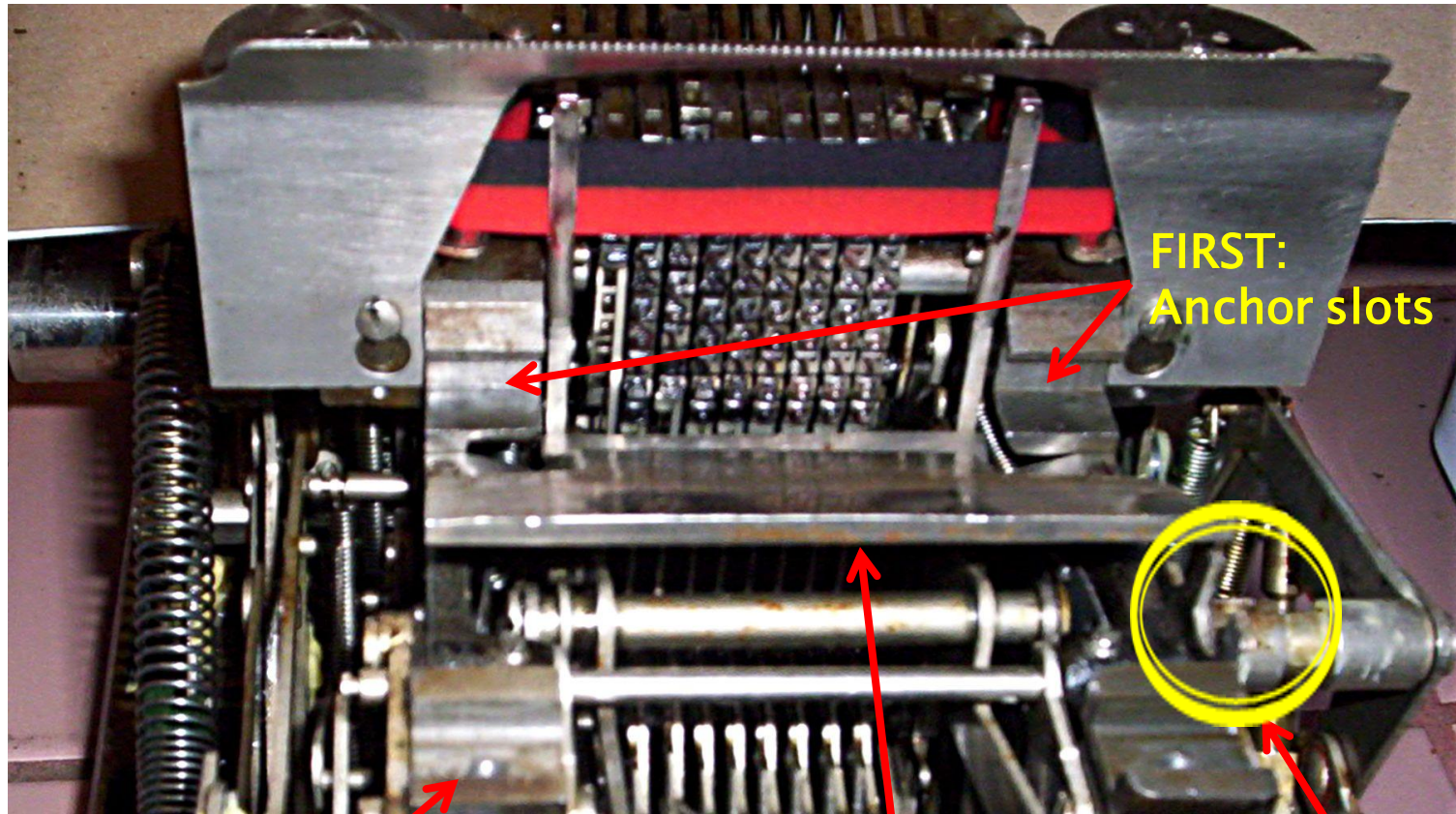


Chart Showing How to Change Ribbons on Old Style Machines.

After cover installed, install carriage with these items in mind:



FIRST:
Anchor slots

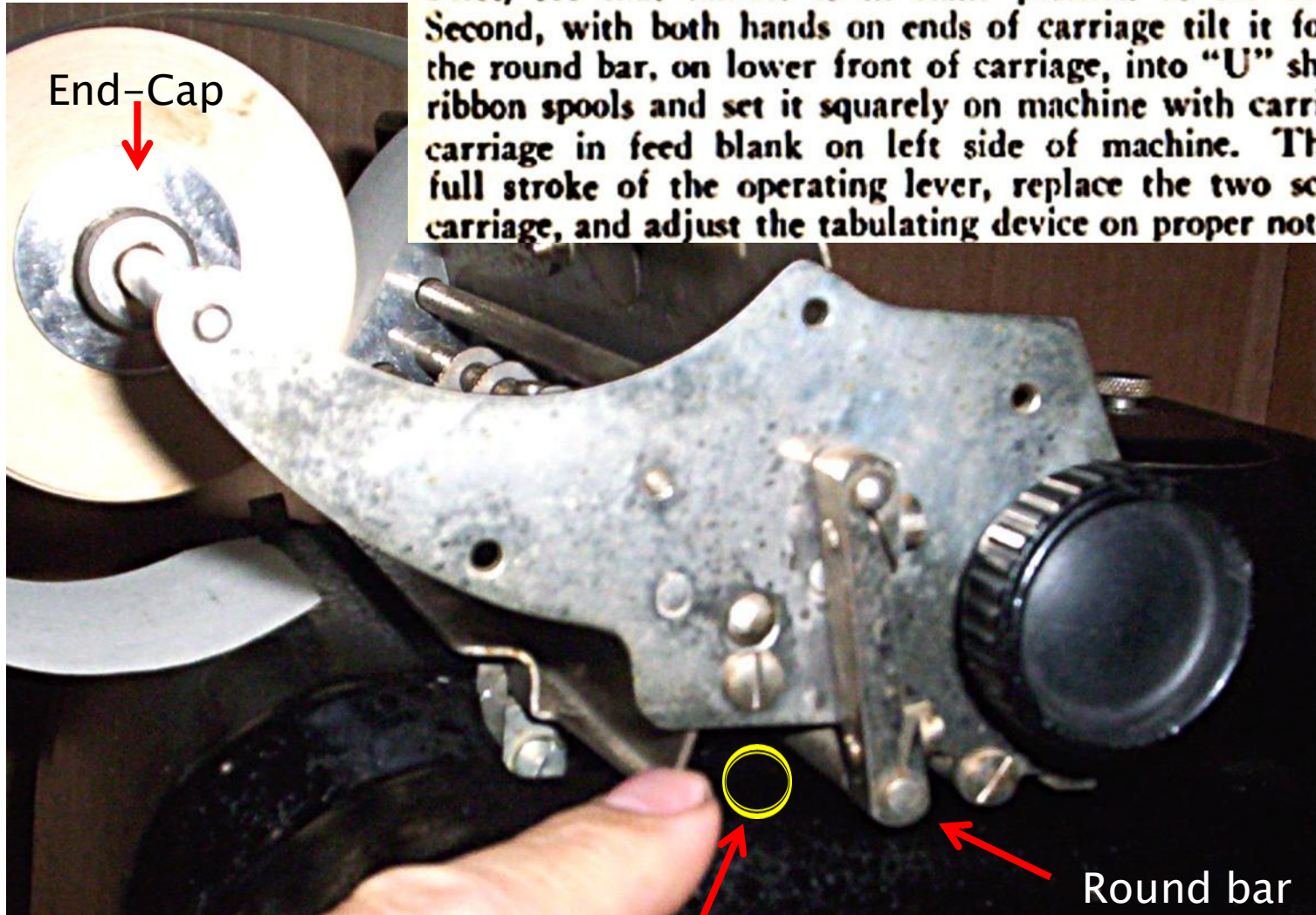
LAST, secure carriage
with 2 rear screws

Round Bar must
sit **ON TOP** of this
flat shield panel

Single "U" joint
with handle
pushed forward

To replace carriage

First, see that handle is in same position as for removing carriage. Second, with both hands on ends of carriage tilt it forward and place the round bar, on lower front of carriage, into "U" shaped parts under ribbon spools and set it squarely on machine with carriage spacer under carriage in feed blank on left side of machine. Then complete the full stroke of the operating lever, replace the two screws on sides of carriage, and adjust the tabulating device on proper notch. The machine



End-Cap

Single "U" joint, hidden here

Round bar
sits on top
of flat shield

- Feed spool paper through adjustable paper guides and up behind tear-off guide.
- Roller allows 6" paper but why?
- Set "Paper Feed" to "1"

- Test all 8 Digits
 - Enter 12345678
 - Enter 87654321
 - Run Grand Total

- Test functions (See Docent Operation PowerPoint):
 - Enter Number
 - Enter Non-Add Number
 - Enter Negative Number
 - Run Sub-Total
 - Enter Number
 - Run Grand Total



Sundstrand Adding Machine – Repair History

- 09/05/2013 Harry Briley Refurbished Digit Casings/Cleaned/Oiled
- 09/07/2013 Harry Briley Greased and oiled missed bearings.
- 10/02/2013 Harry Briley Assembled replacement rubber feet
- 04/23/2014 Harry Briley Elmer's "Glue-All" roller to rubber tube
- 90% Iso rub roller to roughen up surface
- Photo showing carriage installation points
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