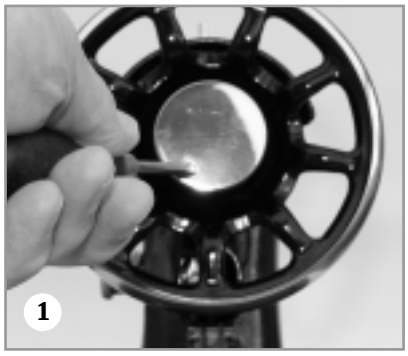
Standard Spoked Wheels:

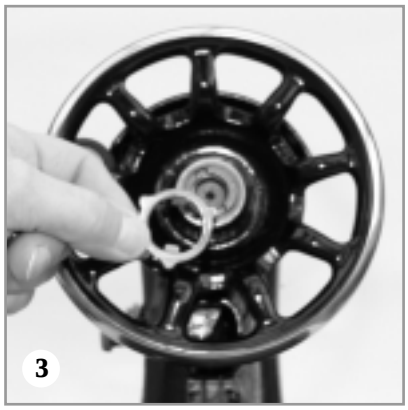
When engaged, the balance wheel transmits the power from the handle (or treadle) to run the machine. The combined weight and spinning motion helps smooth out the action.

When disengaged from the main transmission, the balance wheel is used to drive the bobbin winder.

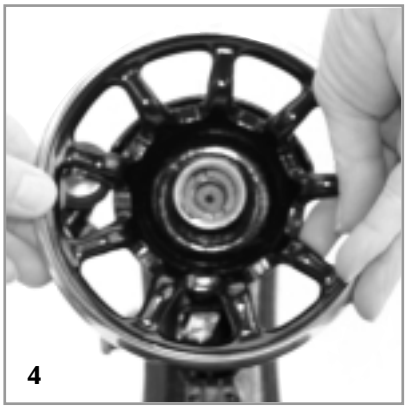


(1) Slacken the small pin screw in the face of the shiny knurled hub disc - known as the stop motion screw.

(2) Unscrew the stop motion screw hub disc.



(3) Remove and clean the odd shaped clutch washer.



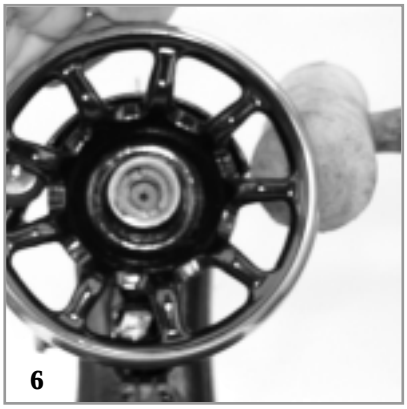
(4) Draw the balance wheel off its spindle then clean and oil spindle and wheel bearing.

If the wheel is tight on the shaft, try easing it by liberally applying penetrating oil.

If the outer rim of the balance wheel is badly pitted or rusted, a replacement wheel may be the best solution.

(5) If the balance wheel is really stuck, place a block of wood beneath the needle bar.

This prevents the machine from turning while you work the balance wheel free. Do not use excessive force because there is a danger of disrupting the timing.



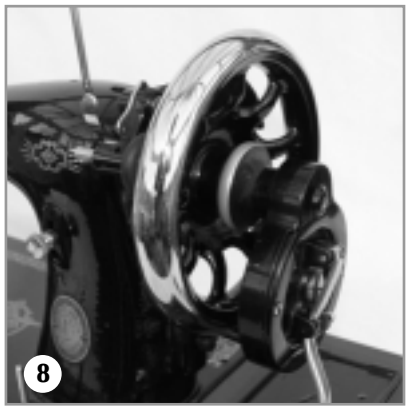
(6) If the wheel is still seized on the shaft, turning it slowly whilst tapping gently with a fibre mallet should dislodge it...

(7) ...or, if you have one, use a Gear Puller like the one illustrated above.

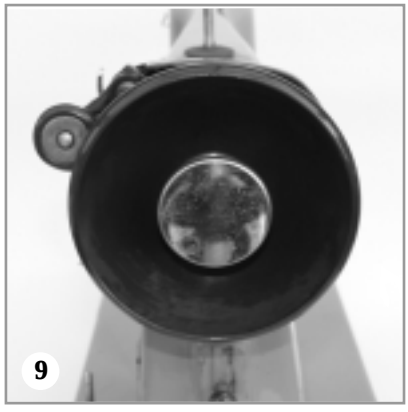
You may need to reverse the arms so the hooks are pointing outwards and can lock on the rim of the balance wheel through the spokes.

Solid & Larger Size Wheels:

Machines with spoked balance wheels are designed for use with handles and/or treadles.



(8) Some very early machines have balance wheels with a thick rim like the one shown. This can sometimes preclude the opportunity of inter-changing handles from some other later models.



2 REFURBISHING - BALANCE WHEEL: STOP MOTION - RE-ASSEMBLY 2

Some machines are designed to be driven solely by a belt and have a solid balance wheel like the one shown.

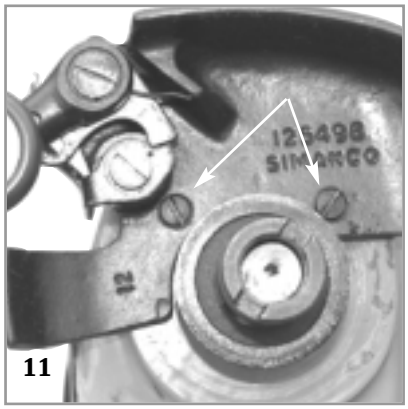
(9) Dismantle and draw a solid wheel off its spindle in the same way as a spoked one.

These solid balance wheels have a larger diameter flange for the bobbin winder to work on than the spoked wheels.

We cannot therefore just substitute a spoked wheel, as the bobbin winder cannot be adjusted to engage with the spoked balance wheel.

(10) Check if the bobbin winder attaches at the top of the machine.

If so, the balance wheel and the bobbin winder can be changed as a pair. If you do not have spares, note it on the refurbishment record on the outside of the case and Netley Marsh will change it.

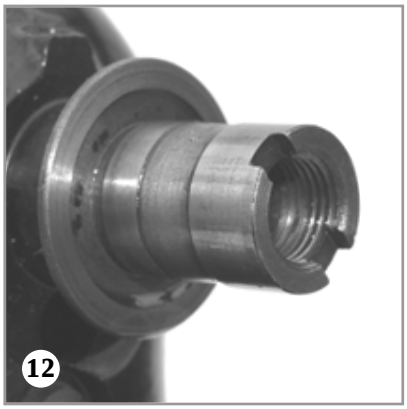


(11) In most cases you will find that the bobbin winder attaches by screws at the side of the machine behind the balance wheel.

All is not lost in this case, as we can use any long base machine - 15K, 66 or 201- for a treadle base, releasing a spoked balance wheel machine for conversion to hand.

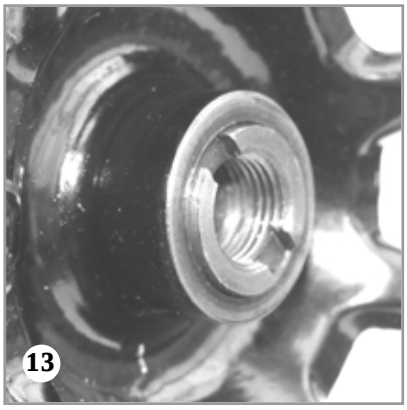
Again, a few solid balance wheels have an indented notch cut in them to allow a handle to be fitted.

We do not recommend that this conversion is attempted on other machines such as 99 and 185.



(12) The picture above shows the Balance Wheel (stop motion) bushing on the end of the end of the driveshaft.

What concerns us is the operation and adjustment of the clutch mechanism which is common to all the machines we send.



(13) Here we see the end of the bushing, projecting through the hub of the balance wheel. Notice particularly the notches at the end of the bushing.

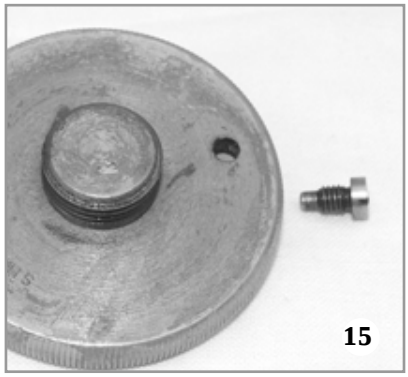
(14) Now the clamp stop motion (or clutch) washer has been added and you can see how the two inside lugs fit into the two notches at the end of the shaft.

Notice how these lugs bend <u>outward</u> from the bushing. This is important because it provides a creeping action for tightening the clutch.

In other words, the clamp stop motion washer acts like an ordinary spring washer except that it is not designed to lock into position.

If the lugs are pointed <u>inward</u> there is no 'give' to the washer at all. It locks almost instantly and is likely to work loose when the machine is working.

Exact adjustment of the stop motion washer is an easy matter if the clutch is understood.



(15) This picture shows the reverse side of the hub disc and the stop pin screw that threads through the hole.

2 REFURBISHING - BALANCE WHEEL: STOP MOTION - RE-ASSEMBLY 2

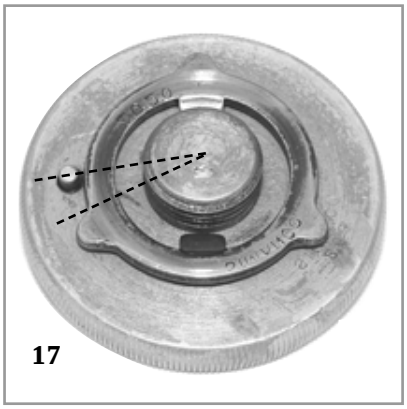
16

(16) When threaded into position the end of the screw projects far enough through the hole so it can strike against the outside ear lugs.

When winding a bobbin it is desirable to have the balance wheel run free, and not turn the driveshaft which operates the machine.

Imagine you could see what was happening behind the disc...

To help you understand, the action the following photos are <u>mirror images.</u>

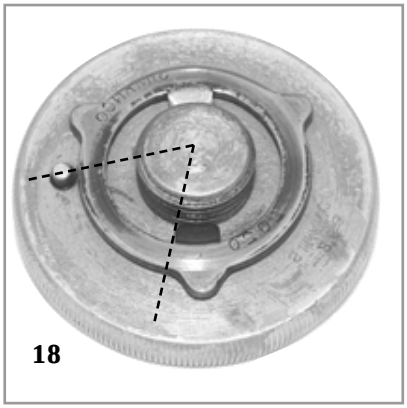


17

(17) The hub disc is unscrewed (anti-clockwise) releasing the pressure until the pin clicks against an outer ear lug, stopping the hub from undoing completely.

When the bobbin is wound, the operator turns the clamp stop hub screw clockwise and, in so doing, tightens the clutch.

The white lines added to photo (16), show where the tips of the projecting sprung lugs rub against the inside surface of the hub screw.



18

(18) If, when the hub is screwed in to its maximum, it is still not tight enough - you will have to remove the clutch washer and turn it through 180 degrees.

The dotted lines show how by doing this you get six times more movement between the pin and the ear lug which allows the thread of the hub screw to bite deeper and increases the pressure.

When you replace the stop motion screw, you can have no idea whether you have located the washer correctly.

However, it will soon become obvious. If it isn't right, take off the screw, turn the washer round 180^{o} and try again.

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(19) It is much easier to fit the washer and screw if you tip the machine up on to its end.