

Clapper Adjusting Set Screws and Their Use for Adjusting Bells for Even Striking

by Whitechapel Bell Foundry

History

Clapper adjusting set screws, usually referred to as "twiddle pins", were introduced by the Whitechapel Bell Foundry in the 1920s as a simple means of adjusting bells fitted with cast iron headstocks for even striking. They were withdrawn in the 1930s as a cost cutting measure but were reintroduced in the 1950s and have been used ever since.

As well as proving of considerable convenience to bellhangers and steeple keepers alike, they also greatly ease the balancing of bells when assembling with their headstocks.

By the late 1960s Whitechapel were not only supplying cast iron headstocks with twiddle pins to their own customers but additionally to other bell hanging companies. By 1980 all UK bell companies incorporated this design feature into their own products. What had started as a Whitechapel design solution had become, 60 years later, the accepted industry standard, and, some 23 years later this still remains true today.

What is "Even Striking"?

A bell is "even" struck if it is struck by the clapper in a regular metronome fashion when allowed to swing freely and unchecked. The tendency to strike early on one side and late on the other side is defined as "odd struck". One or more odd struck bells within a ring of bells creates difficulties for all the ringers in achieving even striking.

Bells that strike early at both strokes or late at both strokes with respect to other bells within the peal, but in a metronome fashion, are not odd struck within the definition of the term. These characteristics are determined by the design and leading dimensions of the moving parts and are not subject to simple adjustment.

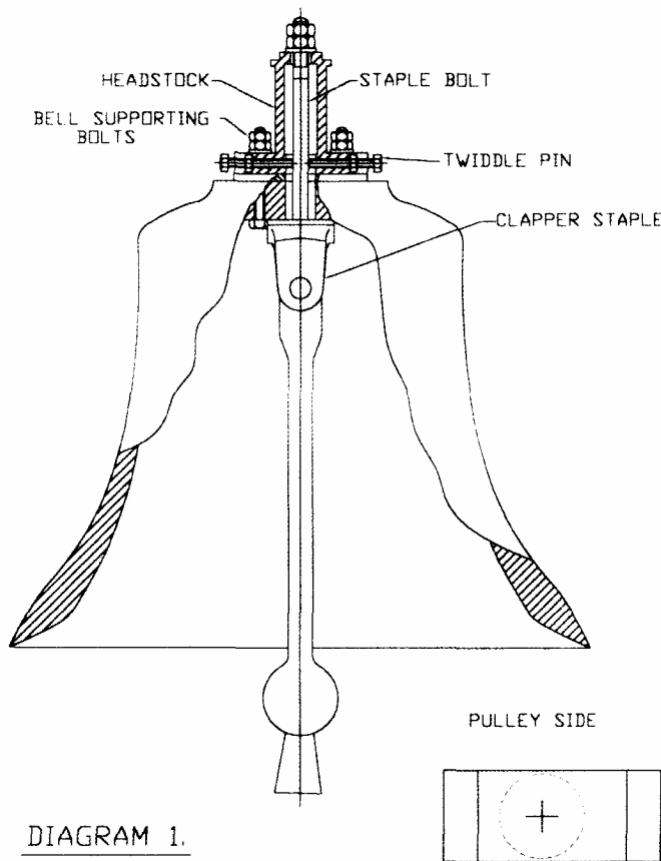


DIAGRAM 1.

WITH BELL IN DOWN POSITION:
IF SLOW AT HANDSTROKE, MOVE
STAPLE TOWARDS PULLEY SIDE.
IF SLOW AT BACKSTROKE, MOVE
STAPLE AWAY FROM PULLEY SIDE.

What do Twiddle Pins look like?

Twiddle pins are two hexagon or square headed setscrews projecting from either side of the headstock centrally in line with the staple bolt and direction of swing of the clapper. They are situated near the bottom of the headstock between the bell supporting bolts (see diagram 1).

How do Twiddle Pins work?

By unscrewing one pin and advancing the other the clapper staple can be made to move forwards or backwards in the direction of the swing of the bell. This movement of the staple with respect to the bell will alter the clapper timing in accordance with the information in diagram 2.

How are adjustments made?

It is recommended that adjustments are made by two persons for both safety and convenience.

Firstly, and for each bell that may need adjustment, establish whether the bell is evenly struck by swinging it up until it clappers both sides, and then allow it to swing down unchecked. If the bell is odd struck the clapper impacts will sound alternatively early and late.

As the arc of the bell reduces, the clapper blows on the "early" side will remain loud whereas those on the "late" side will become quieter. Ultimately, the bell will only strike on the "early" side. It is important to remember which side the bell is early and at which it is late. Adjustments involve moving the staple away from the "early" side of the bell towards the "late" side in the following manner and with reference to diagram 2.

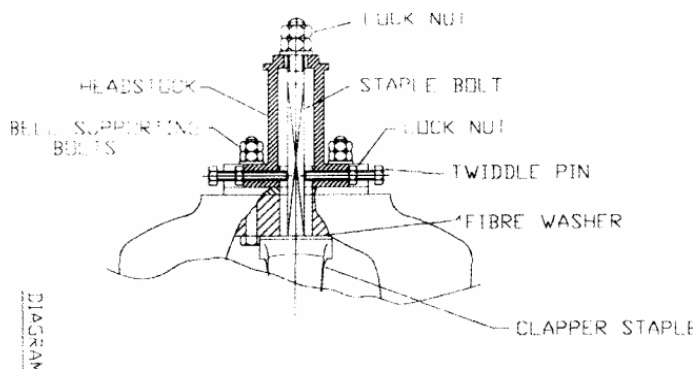


DIAGRAM 2.

1. Ensure that the twiddle pins rotate freely. Remove, clean, lubricate and reinstate if necessary.
2. With the lock nuts well clear of the headstock, screw both twiddle pins into the headstock until they touch against the staple bolt. Unscrew both twiddle pins by half a turn.
3. Loosen the clapper staple bolt nut slightly and until vertical movement of the bolt is just possible.
4. Unscrew the twiddle pin on the "late" side one whole turn and advance the other pin one whole turn.
5. Fully tighten the staple bolt nut ensuring that firstly the clapper is swinging true within the bell and secondly that the twiddle pins are only making light contact with the staple bolt. If necessary, unscrew both twiddle pins a fraction of a turn.
6. Swing the bell until it clappers both sides and observe the change.
7. According to the change and as necessary repeat the exercise until the bell is "evenly struck". Note: movements of as little as a quarter of a turn of the twiddle pins can produce a noticeable change.
8. Make a final check on the tightness of the staple bolt nut and lock the twiddle pin lock nuts against the headstocks ensuring that the inner end of the twiddle pin is just clear of the staple bolt.
9. Fit and tension the staple bolt lock nut or fit the staple bolt split pin as appropriate.