



City of Westminster

Big Ben



The second 'Big Ben' (centre) and the Quarter Bells from The Illustrated News of the World 4 December 1858



Big Ben is the nickname for the great bell of the clock at the north end of the Palace of Westminster in London, and often extended to refer to the clock and the clock tower, officially named Elizabeth Tower, as well. Elizabeth Tower holds the largest four-faced chiming clock in the world and is the third-tallest free-standing clock tower. It celebrated its 150th anniversary on 31 May 2009, during which celebratory events took place. The tower was completed in 1858 and has become one of the most prominent symbols of both London and England, often in the establishing shot of films set in the city.



The Elizabeth Tower (previously called the *Clock Tower*) named in tribute to Queen Elizabeth II in her Diamond Jubilee year – was raised as a part of Charles Barry's design for a new palace, after the old Palace of Westminster was largely destroyed by fire on the night of 16 October 1834. The new Parliament was built in a Neo-gothic style. Although Barry was the chief architect of the Palace, he turned to Augustus Pugin for the design of the clock tower, which resembles earlier Pugin designs, including one for Scarisbrick Hall. The design for the Elizabeth Tower was Pugin's last design before his final descent into madness and death, and Pugin himself wrote, at the time of Barry's last visit to him to collect the drawings: "I never worked so hard in my life for Mr Barry for tomorrow I render all the designs for finishing his bell tower & it is beautiful." The tower is designed in Pugin's celebrated Gothic Revival style, and is 315 feet (96.0 m) high (roughly 16 stories).

Despite being one of the world's most famous tourist attractions, the interior of the tower is not open to overseas visitors, though United Kingdom residents are able to arrange tours (well in advance) through their Member of Parliament. However, the tower has no lift, so those escorted must climb the 334 limestone stairs to the top.

Due to changes in ground conditions since construction, the tower leans slightly to the north-west, by roughly 230 millimetres (9.1 in) over 55 m height, giving an inclination of approximately 1/240. This includes a planned maximum of 22 mm increased tilt due to tunnelling for the Jubilee Line extension)[13] Due to thermal effects it oscillates annually by a few millimetres east and west.

Clock

Dials



The dial of the Great Clock of Westminster. The hour hand is 9 feet (2.7 m) long and the minute hand is 14 feet (4.3 m) long

The clock and dials were designed by Augustus Pugin. The clock dials are set in an iron frame 23 feet (7.0 m) in diameter, supporting 312 pieces of opal glass, rather like a stained-glass window. Some of the glass pieces may be removed for inspection of the hands. The surround of the dials is gilded.

At the base of each clock dial in gilt letters is the Latin inscription:

“DOMINE SALVAM FAC REGINAM
NOSTRAM VICTORIAM PRIMAM”

Which means O Lord, keep safe our Queen Victoria the First.

Movement

The clock's movement is famous for its reliability. The designers were the lawyer and amateur horologist Edmund Beckett Denison, and George Airy, the Astronomer Royal. Construction was entrusted to clockmaker Edward John Dent; after his death in 1853 his stepson Frederick Dent completed the work, in 1854. As the Tower was not complete until 1859, Denison had time to experiment: Instead of using the deadbeat escapement and remontoire as originally designed, Denison invented the double three-legged gravity escapement. This escapement provides the best separation between pendulum and clock mechanism. The pendulum is installed within an enclosed windproof box sunk beneath the clockroom. It is 13 feet (4.0 m) long, weighs 660 pounds (300 kg) and beats every 2 seconds.

The clockwork mechanism in a room below weighs 5 tons. On top of the pendulum is a small stack of old penny coins; these are to adjust the time of the clock. Adding a coin has the effect of minutely lifting the position of the pendulum's centre of mass, reducing the effective length of the pendulum rod and hence increasing the rate at which the pendulum swings. Adding or removing a penny will change the clock's speed by 0.4 seconds per day.

On 10 May 1941, a German bombing raid damaged two of the clock's dials and sections of the tower's stepped roof and destroyed the House of Commons chamber. Architect Sir Giles Gilbert Scott designed a new five-floor block. Two floors are occupied by the current chamber, which was used for the first time on 26 October 1950. Despite the heavy bombing the clock ran accurately and chimed throughout the Blitz.