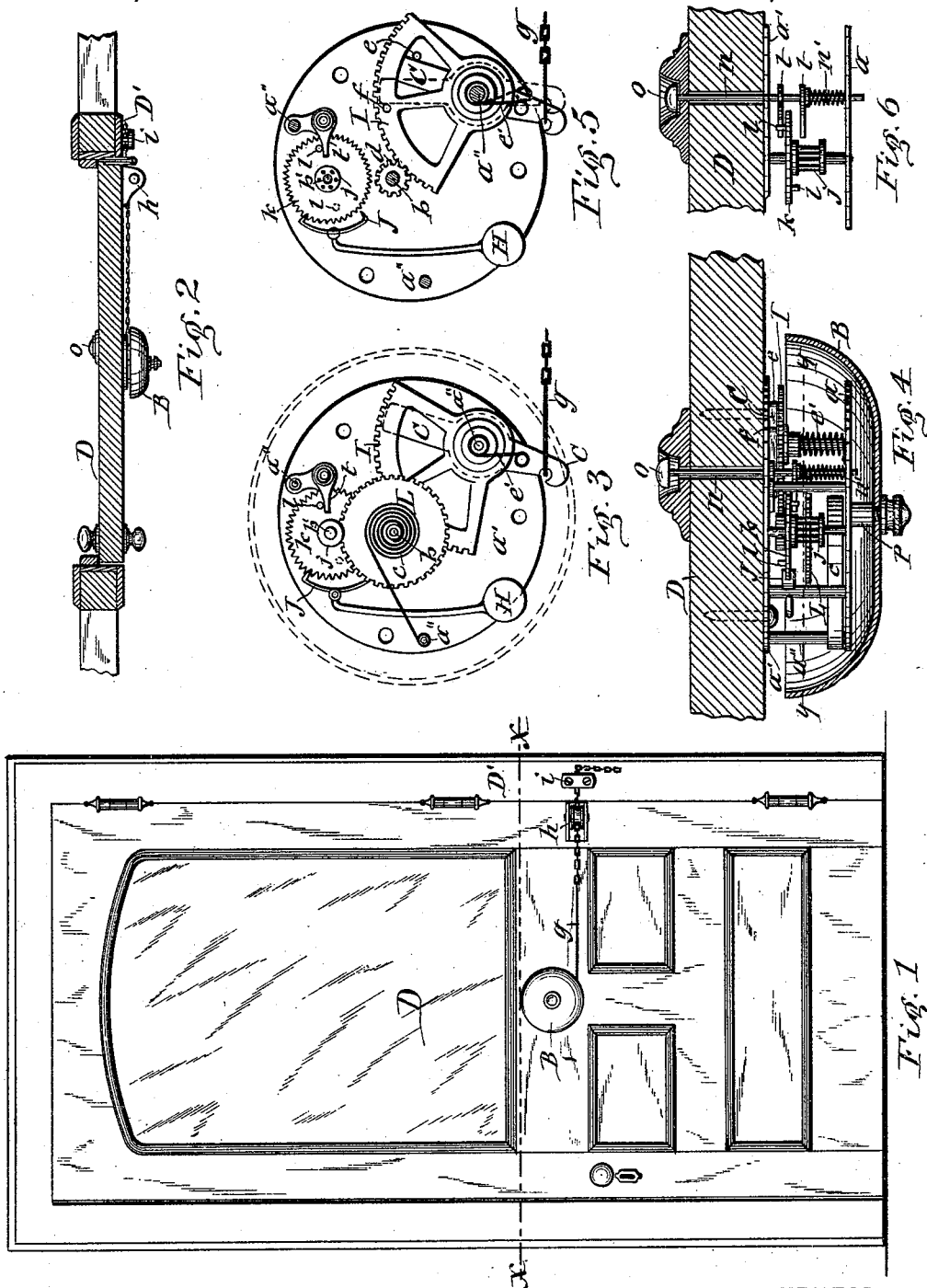


(No Model.)

C. E. VAN WORMER.
DOOR BELL.

No. 492,070.

Patented Feb. 21, 1893.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHAUNCEY E. VAN WORMER, OF SYRACUSE, NEW YORK, ASSIGNOR OF TWO-THIRDS TO CHARLES S. PHARIS AND CHARLES H. KNAPP, OF SAME PLACE.

DOOR-BELL.

SPECIFICATION forming part of Letters Patent No. 492,070, dated February 21, 1893.

Application filed January 29, 1892. Serial No. 419,635. (No model.)

To all whom it may concern:

Be it known that I, CHAUNCEY E. VAN WORMER, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Door-Bells, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists essentially of a spring-actuated door-bell whose spring is wound up automatically with the movement of the door. And the invention also consists in certain novel features of the construction and combination of the component parts of said door-bell as hereinafter fully described and specifically set forth in the claims.

In the annexed drawings Figure 1 is a view of the inner side of a door equipped with a door-bell embodying my invention, Fig. 2 is a transverse section on line *x, x*, in Fig. 1, Fig. 3 is an enlarged detached face view of the bell ringing mechanism, Fig. 4 is a plan view of the bell mechanism with the bell in central cross-section. Fig. 5 is a face view of the mechanism which is back of the line *y, y*, in Fig. 4, and Fig. 6 is a detail view of the detents which limit the movement of the bell ringing mechanism.

Similar letters of reference indicate corresponding parts.

D—represents the door, and —B— the bell or gong which is mounted on the post —P— projecting from the front plate —a— of a frame composed in addition to said plate, of another plate —a'— parallel therewith and secured thereto by posts —a'', —a''. Said frame is firmly secured to the door as represented in Fig. 4 of the drawings. To the plates —a— —a'— is pivoted a shaft —b— on which is wound and secured at one end a coil-spring —c—, the opposite end of which is fastened to one of the posts —a''. To said shaft is also rigidly secured a pinion —d— with which meshes a toothed quadrant —I— mounted oscillatory on one of the posts —a''. On this post is also mounted a rock-arm, —C— which by means of a spring —e'— is held yieldingly resting against a stop —e— fixed to the plate —a'— as shown in Fig. 5 of the drawings. The quadrant being there shown in a different position than in Fig. 3 for the

purpose of illustrating the position of said stop.

In the path of one end of the rock-arm is a lug —f— fixed to the quadrant —I— so that the movement of the former in one direction carries with it the latter. To the opposite end of the rock-arm is attached a chain or rod —g— which extends to the casing —D'— of the door and is firmly secured thereto, so that in opening the door the said chain or rod is subjected to a draft which swings the rock arm on its axis and causes the same to turn the quadrant —I— which imparts rotary motion to the pinion —d— and thereby winds up the spring —c. In order to increase the aforesaid draft on the chain or rod —g— I attach to the door near the edge thereof a pulley —h— between which and the door the said chain or rod passes. To allow the chain —g— to be adjusted to different widths of doors or to the requisite tension, I attach said chain to the door-casing by means of a clamping plate —i— placed astride the chain and secured to the casing by screws passing through the end portions of said plate.

Parallel with the shaft —b— is a counter shaft —b'— pivoted to the plates —a— —a'— and to this counter shaft are fastened the pinion —j— and escape-wheel —k. A gear wheel —L— fastened to the shaft —a— meshes with the pinion —j— and thus transmits motion to the escape wheel. A verge —J— pivoted to the plates —a— —a'— engages the escape-wheel and has affixed to it the bell-hammer —H. The rotation of the escape wheel imparts an oscillatory motion to the verge —J— and thereby causes the hammer —H— to sound the bell —B. To control this action of the bell-hammer I attach to opposite sides of the escape-wheel —k—, lugs —l— —l— and on one of the posts —a''— I hang the detents —t— —t— which are disposed at opposite sides of the escape-wheel and are firmly secured to the stem —n— of the push button —o— arranged on the opposite side of the door as shown in Figs. 4 and 6 of the drawings, which show the push button in its depressed position and normal position respectively. The spring —n'— holds the push-button stem in its normal position.

The lug —l— on one side of the escape is in

a different position in the circumference of the wheel than the lug on the opposite side thereof, and when only one lug is employed on each side of the wheel said lugs are disposed
 5 at opposite sides of the center of the wheel as shown and are in the paths of the detents —*t*—*t*— which latter are a sufficient distance apart to allow them to move laterally out of engagement with the lugs. The engagement
 10 of either detent with the lug on the adjacent side of the escape wheel arrests the movement of said wheel and thereby restrains the hammer —*H*— in its dormant position. The push button normally holds one of the de-
 15 tents engaged as aforesaid, and by pushing on said button said detent is thrown out of engagement with the lug and consequently the escape wheel is allowed to turn and cause the hammer —*H*— to sound the bell. In case
 20 the operator maintains the pressure on the push-button the other lug —*l*— comes in contact with the second detent —*t*— and thus the escape wheel is arrested in its motion, and by releasing the push button the first lug comes
 25 in contact with the first detent and the ratchet wheel is held dormant during the normal position of the push-button.

The diameter of the quadrant is so much greater than that of the pinion —*d*— as to
 30 cause one movement of the door to its open position, to turn the pinion a sufficient number of times to effectually wind up the spring —*c*. The danger of excessively straining the
 35 rock-arm —*C*— operating independently of

the quadrant —*I*— and incapable of moving the latter beyond a certain degree.

Having described my invention, what I claim as new, and desire to secure by Letters
 Patent, is—

1. The combination, with the door and door-casing, of a bell and spring-actuated bell-hammer attached to the inside of the door, a
 40 detent restraining the motion of the bell-hammer, a push-button extending through the door from the outside thereof and adapted to
 45 throw the detent out of its restraining position, mechanism for winding the aforesaid actuating spring, a sheave or guide attached to the door near the hinged edge thereof, and
 50 a chain or cord connected at one end to said winding-mechanism and passing with its opposite end between the door and sheave or guide and fastened to the adjacent door-cas-
 55 ing substantially as set forth.

2. In combination with the bell, its hammer and spring-actuated shaft imparting motion to said hammer, a pinion fixed to said shaft, a quadrant engaging said pinion, a rock-arm
 60 movable independent to the quadrant, a lug projecting from the quadrant and in the path of the rock-arm, and a chain or rod connect-
 65 ing the rock-arm to the door-casing, substantially as described and shown.

In testimony whereof I have hereunto signed
 my name this 26th day of January, 1892.

CHAUNCEY E. VAN WORMER. [L. s.]

Witnesses:

E. LAASS,

MARK W. DEWEY.