(No Model.) 2 Sheets—Sheet 1.

D. P. WOLHAUPTER.

SPEED INDICATING BELL FOR BICYCLES, &c.

No. 575,086. Patented Jan. 12, 1897.

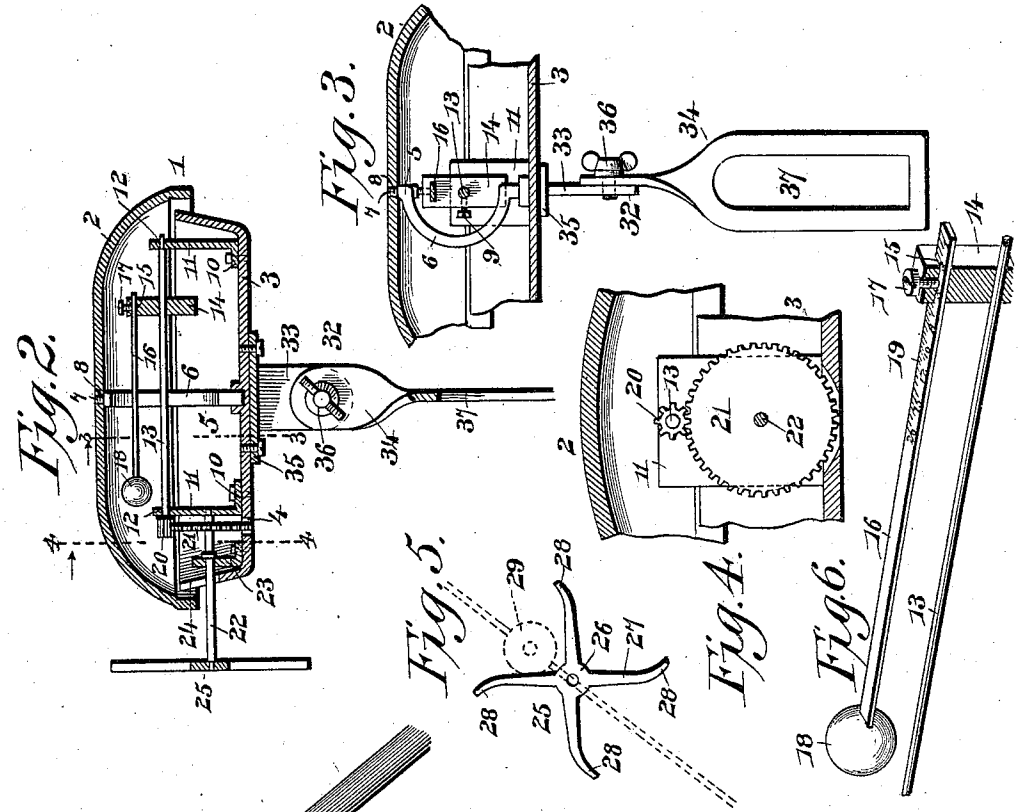

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

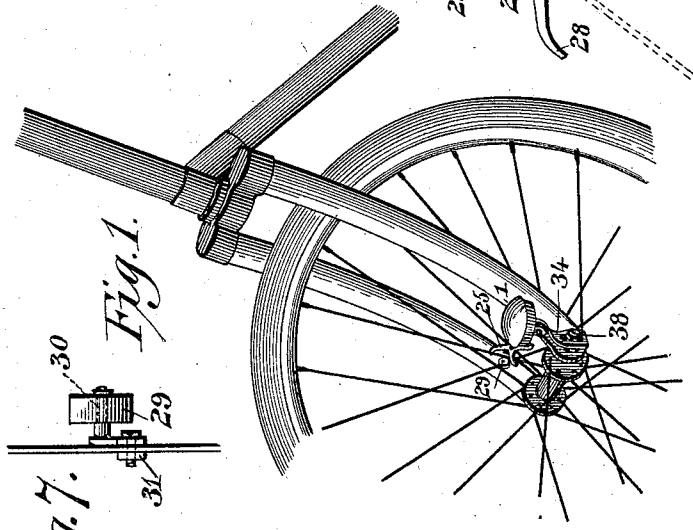

Fig. 1.

Fig. 7.

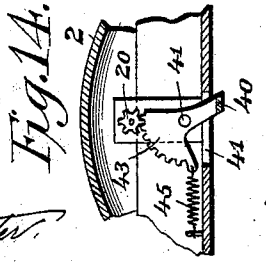

Fig. 14.

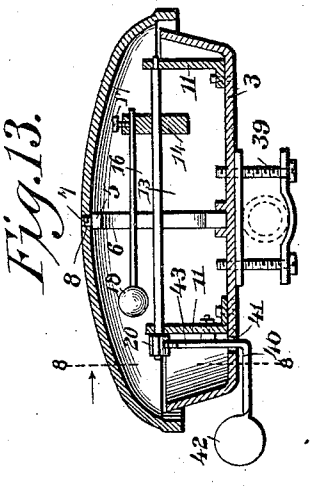

Fig. 13.

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(No Model.) 2 Sheets—Sheet 2.

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SPEED INDICATING BELL FOR BICYCLES, &c.

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Fig. 9.

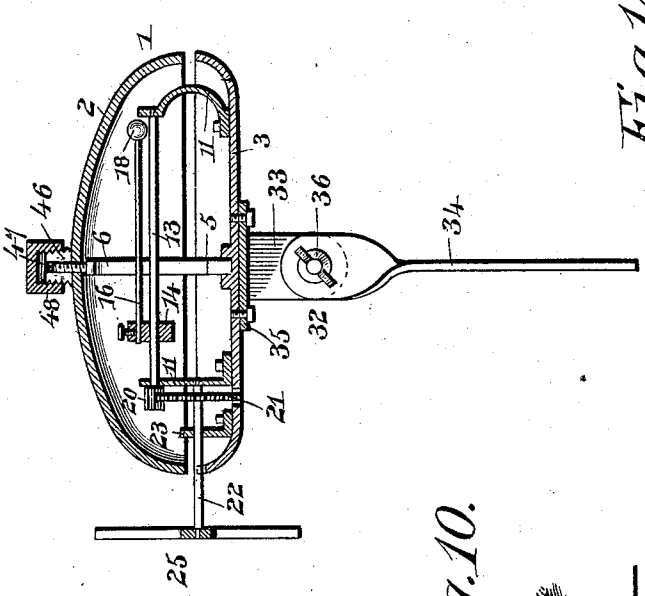


Fig. 12.

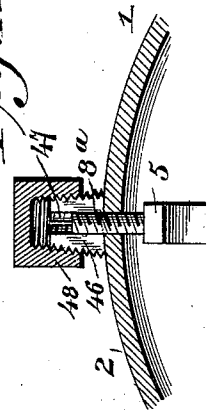


Fig. 10.

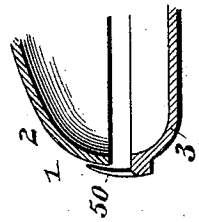


Fig. 8.

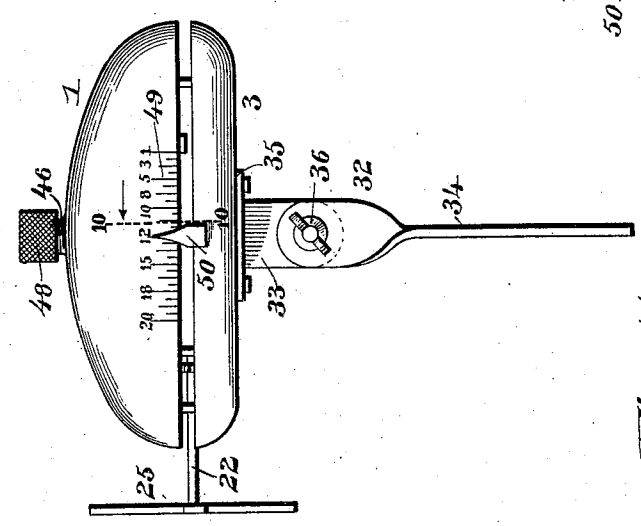
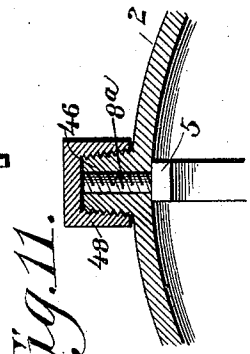


Fig. 11.



Witnesses
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Clara M. Wolhaupter.

Inventor.
David P. Wolhaupter.

UNITED STATES PATENT OFFICE.

DAVID P. WOLHAUPTER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-HALF TO EDWARD G. SIGGERS, OF SAME PLACE.

SPEED-INDICATING BELL FOR BICYCLES, &c.

SPECIFICATION forming part of Letters Patent No. 575,086, dated January 12, 1897.

Application filed November 2, 1896. Serial No. 610,864. (No model.)

To all whom it may concern:

Be it known that I, DAVID P. WOLHAUPTER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented a new and useful Bicycle-Bell, of which the following is a specification.

This invention relates to bicycle-bells; and it has for its object to provide a new and useful form of bell of this character that can be adapted for use as a speed-indicating bell or alarm, a continuous alarm-bell, and also as an ordinary hand-bell.

One of the principal objects of the invention is to provide a form of bell that will automatically ring when the bicycle or other vehicle reaches or exceeds the speed at which the bell is set to operate.

To this end the invention contemplates constructing a speed-indicating bell in as simple a manner as possible, while at the same time being positive and efficient in operation to indicate with reasonable correctness any predetermined speed desired to be indicated, and in this function the invention is especially useful in warning riders of bicycles when they are exceeding "regulation" speed in districts or cities where the speed of bicycles is limited by law or city ordinance.

The invention, as before referred to, also contemplates a construction of bell which, while primarily designed to operate at any predetermined speed, at the same time may be so adjusted as to provide for ringing a light continuous alarm whenever it is desired for the bell to operate at ordinary speeds and in places where a continuous alarm is required.

A still further and third object of the invention is to provide a new and useful bell mechanism that is well adapted for use in an ordinary form of hand-bell, such as is usually employed on the handle-bar of a bicycle.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The salient features of my invention are susceptible to a variety of modifications, but for the purposes of this application the same are shown embodied in the preferred practical forms of bells illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a speed-indicating bell constructed in accordance with this invention and shown in its applied position. Fig. 2 is a transverse sectional view of one form of the complete bell. Fig. 3 is a detail transverse sectional view on the line 3 3 of Fig. 2. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 3. Fig. 5 is a detail elevation of the spider strike-wheel, showing in dotted lines the interfering button engaging therewith. Fig. 6 is a detail perspective of the rotary bell-shaft and the resilient spring hammer-arm carried thereby. Fig. 7 is a detail view of the interfering button. Fig. 8 is a side elevation of the complete preferred form of bell, showing the preferred means for setting the bell to operate at different speeds. Fig. 9 is a transverse sectional view of the construction illustrated in Fig. 8. Fig. 10 is a detail sectional view on the line 10 10 of Fig. 8. Figs. 11 and 12 are enlarged detail sectional views of the top connection for the bell member. Fig. 13 is a transverse sectional view of the bell shown modified for use as an ordinary signal-bell. Fig. 14 is a detail sectional view on the line 8 8 of Fig. 13.

Referring to the drawings, the numeral 1 designates the bell-body, comprising the bell member 2 and the base 3. The bell member 2 and the base 3, comprising the bell-body 1, are of the same general form and size as found in ordinary bells commonly employed on bicycles and the like, and in the present invention the base 3 of the bell-body has fitted centrally thereto, as at 4, one end of the supporting-post 5. The supporting-post 5 is rigidly connected with the base 3 to provide for the proper support of the bell member 2 out of contact with the base 3, in order that the vibrations of the bell member will not be impaired, and said supporting-post 5 is provided with a laterally-arched body portion 6 for a purpose to be presently explained. At the end opposite its connection with the base 3 the post 5 is provided with a threaded stud or terminal 7, engaging in the threaded opening 8, formed centrally in the top of the bell member 2, the threaded-post connection between the bell member 2 and one end of the

supporting-post 5 permitting the bell member to be quickly and readily disconnected from the post when required.

In the present invention the base 3 of the bell-body has fitted to the inner side thereof, as at 10, the flanged ends of the short oppositely-located bearing-plates 11. The short bearing-plates 11 are arranged at opposite sides of the transverse center of the bell-body and are shorter in length than the space between the bottom of the base and top of the bell member, said bearing-plates being provided near their upper ends with bearing-openings 12 to receive the opposite ends of the rotary bell-shaft 13. The rotary bell-shaft 13, which is supported for rotation by the oppositely-located bearing-plates 11, is arranged intermediate of and in a plane parallel with the top of the bell-member and the bottom of the base 3, or, in other words, the rotary bell-shaft 13 may be said to be arranged diametrically within the bell-body in a plane intermediate of the base and bell member. The rotary diametrically-arranged bell-shaft 13 extends almost entirely across the space between diametrically opposite points of the bell-body and has adjustably fitted thereon a collar 14. The collar 14 is made fast on the shaft 13 in any adjusted position, so as to turn therewith, by means of a set-screw 9, and at one side of the shaft 13 the said collar is provided with an opening 15, disposed parallel with the shaft 13 and adapted to slidably receive therein one end of a spring-metal hammer-arm 16, which is secured fast in any adjusted position in the opening 15 by means of a set-screw 17, mounted in a threaded opening in the collar 14 and working into the opening 15, so as to impinge against the spring-metal hammer-arm 16.

The spring-metal hammer-arm 16 consists of a suitable length of straight leaf-spring having a sufficient degree of resiliency so as to readily spring away from the rotary shaft 13 by centrifugal force when such shaft is rotated, and at its free end the said hammer-arm carries a ball or other suitable clapper 18, adapted to be thrown out against the bell member 2 when the shaft 13 is given a quick or sudden rotation. The spring-metal or resilient hammer-arm 16, carrying the clapper 18, is of a length nearly equaling that of the shaft 13, and by reason of the disposition of the opening 15 the said spring-metal hammer-arm is disposed at one side and longitudinally of the shaft 13, or in a plane parallel therewith. Such disposition of the hammer-arm insures the movement of the clapper end thereof in a direction away from the shaft 13 by centrifugal force, and the freedom of movement of the clapper 18 out against the bell member depends entirely upon the resiliency of the arm 16 when adjusted to any position within the opening of the collar 14 by sliding the collar in the shaft 13 and also in the spring-arm 16. This adjustment of the collar on the shaft to regulate the resiliency of the spring may be necessary at times to stiffen or weaken the same, and the adjustment may also be resorted to, if desired, for setting the bell to operate at regulation or other speeds, as by proper testing of a completed bell the action of the spring-metal hammer-arm 16 under different speeds of the shaft 13 may be readily determined, whereby the said hammer-arm 16 may be formed with a series of speed-graduations 19, as indicated in Fig. 6, which graduations indicate miles and fractions thereof, and are adapted to be brought into alinement with one side of the collar 14, so that the hammer-arm may be regulated to operate under any predetermined speed. It will therefore be observed that by adjusting the collar 14 on the shaft 13 and the hammer-arm 16 so as to lengthen or shorten the distance between the clapper 18 and the collar 14 the resiliency of the hammer-arm will be increased or diminished, thereby making it easier or harder, as the case may be, for the clapper 18 to be thrown out against the top of the bell member by centrifugal force and ring the bell. The shorter the distance between the collar 14 and the clapper 18 the more force will be required to throw the clapper out against the bell member, and under such conditions a quicker movement of the bell-shaft 13 will be required to operate the bell, and vice versa, so it will be readily seen that the manner of mounting the spring-metal hammer-arm provides simple and convenient means whereby the same can be adjusted to operate against the bell member at any desired speed, and thereby indicate when such speed has been attained, it being understood that the detachable mounting of the bell member 2 permits of ready access to the interior of the bell-body for the purpose of adjusting the hammer-arm when this means is depended on to operate the bell at different speeds.

The rotary bell-shaft 13 carries at one end a pinion 20, meshing with a gear-wheel 21, of a much larger diameter than the pinion 20, whereby a partial rotation of the wheel 21 will provide for one or more complete rotations of the shaft 13. The gear-wheel 21 is mounted fast on the inner end portion of a short counter-shaft 22, supported for rotation in alined bearings formed in one of the bearing-plates 11 and an adjacent short supplemental bearing-plate 23, secured to the inner side of the base 3 near one edge thereof. The short counter-shaft 22 extends from its bearing-supports within the bell-body through a shaft-opening 24 in one side of the bell-body, and has fitted on its outer end, at right angles to its length, a spider strike-wheel 25.

The spider strike-wheel 25 on the outer end of the shaft 22 is disposed within reasonably close proximity to the bell-body, and essentially comprises a hub 26 and a plurality of radial strike-arms 27, formed with curved tips or bills 28 and adapted to be engaged by an interfering button 29, carried by one of

the spokes of the front wheel of a bicycle. The interfering button 29 preferably consists of a rubber or similar disk loosely mounted on a short spindle 30, projected from one side of a small clamp 31, adapted to be secured to one of the spokes of the front wheel of a bicycle, as illustrated in Figs. 1 and 9 of the drawings, whereby as the wheel of the bicycle rotates the said button will be sharply carried against the strike-arms 27 of the spider-wheel and cause motion to be communicated to the bell-shaft 13 through the medium of the meshing gears 20 and 21.

The bell-body is designed to be properly supported in position for use by means of a sectional bracket-arm 32, comprising separate inner and outer members 33 and 34, respectively. The inner member 33 of the bracket-arm is provided with an attaching-flange 35, screwed or otherwise secured to the outer side of the base 3, but it will of course be understood that the bracket-arm may be attached to the base of the bell-body in any other suitable manner. The two members of the bracket-arm 32 overlap at their adjacent ends and are pivotally clamped together at such ends by means of a clamping set-screw 36, engaging alined threaded openings in the two members. The outer member 34 of the bracket-arm is twisted so as to dispose its separated twisted portions at direct angles to each other, and the said member 34 is formed with a longitudinally-disposed slot 37, adapted to take over one end of the front axle-bolt 38 of a bicycle, as illustrated in Fig. 1 of the drawings.

After the slotted member 34 of the sectional bracket-arm 32 is fitted over one end of the front axle-bolt of the bicycle one of the nuts usually fitted on the ends of said axle-bolt is replaced and screwed against the slotted member 34 to provide means for clamping the bracket-arm 32 in an upright position, so as to support the bell-body 1 in an approximately horizontal plane, whereby the spider strike-wheel 25 will be disposed in close proximity to the spokes of the wheel directly in the path of the interfering button 29 carried thereby. The said interfering button 29 is designed to be fastened in such a position on one of the spokes of the wheel, relatively to the position of the strike-wheel 25, whereby it, the button, in its forward movement as it passes through the front fork will engage with one of the radial arms of the strike-wheel near to the hub of such wheel, thereby insuring as long a contact as possible between the button and the radial strike-arm which it engages, so that at least a quarter of a revolution will be imparted to the strike-wheel every time it is engaged by the button.

In the event of the interfering button not striking one of the radial arms of the strike-wheel near the hub, as described, said button will come in contact with the curved tip or bill 28 of one of the radial arms, which will cause the strike-wheel to be sharply deflected forward as the button advances through the front fork of the bicycle, so that under all conditions the contact of the interfering button with the strike-wheel will cause the counter-shaft 22 to be given a sufficient rotation to impart to the bell-shaft 13 one or more complete quick turns. It will of course be understood that the rapidity of rotation of the bell-shaft 13 depends upon the rapidity of rotation of the bicycle-wheel, and by a proper adjustment of the spring-metal hammer-arm 16 to any graduated point on the scale 19 the resiliency of the said hammer-arm may be increased or diminished, so that the clapper will not spring out against the bell member and ring the bell until the bicycle is traveling at a rate of speed which, through the medium of the gearing described, will cause the shaft 13 to rotate or turn rapidly enough to impart the necessary centrifugal force to the clapper for throwing the same out against the bell member.

When it is desired to throw the bell out of operation, it is simply necessary to loosen the clamping set-screw 36 and swing the bell-body outward on the screw as a pivot, which screw is then retightened to secure the bell in its inoperative position, and at this point it is to be observed that when at night or at other times it is desired to have the bell operate continuously while the machine is in motion, to sound a light intermittent alarm or signal, it is simply necessary to lengthen out the spring-metal hammer-arm 16 within the opening of the collar 14 to its full length.

In the preferred form of speed-indicating bell I contemplate using the ringing or striking mechanism in conjunction with other means than those described for setting the bell to operate at any predetermined speed, as illustrated in Figs. 8 to 12, inclusive, of the drawings. In this construction the bell member 2 is formed with a central exterior externally-threaded boss 46, having an elongated threaded bore 47, adapted to adjustably engage the exteriorly-threaded stud 8^a at one end of the arched supporting-post 5. The stud 8^a is made extra long and formed with a thread of long pitch, so that a slight turn of the bell member 2 will provide for materially varying the normal distance between such bell member and the clapper 18, whereby the bell may be readily set to operate at any predetermined speed. In the construction described the boss 46 is longitudinally split and receives in the exterior threads thereof an interiorly-threaded clamping cap or nut 48, adapted to pinch or bind the split boss 46 in the stud 8^a to provide for securing the bell member 2 in any adjusted position, two adjusted positions of the bell member being illustrated in Figs. 11 and 12 of the drawings. By a proper testing of the preferred construction of the bell illustrated in Figs. 8 to 12, inclusive, of the drawings the bell member 2 may be accurately provided at one edge with a series of speed-graduations 49,

and over this graduated portion of the bell member projects a fixed pointed finger 50, integrally extended upward from one edge of the base 3. By turning the bell member 2 to any graduated point, and thereby regulating the distance between the top thereof and the clapper 18, the bell may be set to operate when the bicycle reaches the indicated speed.

The principle of construction upon which the speed-indicating bell is designed to operate may be applied with good results to modified forms of bells without departing from the present invention, as in Fig. 13 of the drawings is illustrated a modification of the bell adapted for use as an ordinary manually-operated bell. In this construction the base 3 of the bell is provided with an ordinary clamp 39, adapted to be clamped to the handle-bar or other convenient part of the machine, and in place of the counter-shaft 22 and its wheels 21 and 25 is substituted an oscillating finger-lever 40. The oscillating finger-lever 40 is angled intermediate of its ends and is arranged to work in a slot 41, formed in the base 3 of the bell-body. The finger-lever 40 is formed at its outer end with a finger-plate 42 and at its inner end, within the bell-body, is formed with a gear-segment 43, pivotally mounted on the pivot 41, secured or fitted to one of the bearing-plates 11. The gear-segment 43 of the finger-lever meshes with the pinion 20 of the bell-shaft 13, and has connected therewith one end of a retractile spring 45, the other end of which spring is attached to the base 3 to provide for normally oscillating the finger-lever in one direction. By sharply moving the finger-lever in a direction against the tension of the spring 45 it will quickly turn or rotate the shaft 13 and cause the clapper to be thrown out against the bell member.

Other modifications of the bell will readily suggest themselves to those skilled in the art, and it will be understood that changes in the form, proportion, and minor details of construction may be resorted to without sacrificing any of the advantages or departing from the principle of this invention.

While many modifications of the construction herein described, may be resorted to still I recognize it to be old in the art to employ in bicycle and other bells ringing or striking mechanism having the clapper or striker influenced by centrifugal force. I therefore make no broad claim to this principle of operation embodied in a bell ringing or striking mechanism; but I believe myself to be the first to arrange a rotary shaft horizontally or diametrically within a bell-body in connection with a swinging or resilient hammer-arm formed of a stiff leaf-spring rigidly connected with the shaft at one end and maintaining an approximate parallelism thereto. Another feature that I believe myself to be the first to invent is to mount the ringing or striking mechanism entirely within a bell-body on the base portion thereof and to make the bell member adjustable with relation to said mechanism, so as to provide for varying at will the normal distance between the clapper and said bell member, or, in other words, to vary the throw of the clapper.

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

1. In a bell, the bell-body having a base and a bell member supported by the base, a rotary shaft journaled in bearings provided on the base and arranged diametrically within the bell-body, a stiff leaf-spring disposed longitudinally of the shaft and rigidly fastened or secured at one end thereto, said leaf-spring carrying at its free end a clapper, and operating connections with said shaft, substantially as set forth.

2. In a bell, the bell-body, a rotary shaft arranged diametrically within the bell-body intermediate of the top and bottom thereof, a resilient hammer-arm having an adjustable connection at one end with the shaft and carrying at its other end a clapper, said hammer-arm being normally disposed parallel with the shaft, and operating connections with said shaft, substantially as set forth.

3. In a bell, the bell-body, a rotary shaft supported diametrically within the bell-body in a plane intermediate of the top and bottom thereof, a collar or support slidably mounted on the rotary shaft near one end thereof and provided therein with an opening disposed parallel with the shaft, a straight spring-metal hammer-arm arranged parallel with the shaft and adjustably fitted in the opening of said collar or support, said spring-metal hammer-arm carrying at its free end a clapper, and operating connections with said shaft, substantially as set forth.

4. In a bell, the bell-body, a rotary shaft supported diametrically within the bell-body, a spring-metal hammer-arm carrying at one end a clapper and connected at its other end with the shaft, means for increasing and diminishing the throw of the hammer-arm, and operating connections with said shaft, substantially as set forth.

5. In a bell, the bell-body, a rotary shaft supported diametrically within the bell-body and carrying at one end a pinion, a resilient hammer-arm arranged longitudinally of the shaft and connected at one end therewith, a short counter-shaft mounted at its inner end within the bell-body and carrying at such end a gear-wheel meshing with said pinion, a spider strike-wheel fitted on the outer end of said counter-shaft, and an interfering button adapted to engage with the radial arms of the spider strike-wheel, substantially as set forth.

6. The combination with an interfering button adapted to be fitted to one of the spokes of a bicycle-wheel, a stationary bracket-arm mounted in a fixed position on one extremity of the wheel-axle, an alarm-bell hinged to said stationary bracket-arm and provided with striking mechanism having an exterior oper-

ative engagement with said interfering button, and means for securing the hinged bell in either an operative or inoperative position, substantially as set forth.

7. In a bell, the bell member, striking mechanism mounted in a fixed position entirely within the bell member and having a clapper adapted to move thereagainst, and means for adjusting the bell member in a direction to vary the distance between the same and the clapper, whereby the throw of the latter is increased or diminished, substantially as set forth.

8. In a bell, the bell-body carrying a fixed pointer and having a circularly-movable bell member provided with speed-graduations, and adjustable in a direction toward and away from the base of the bell-body, means for securing the bell member in a set position, and ringing or striking mechanism mounted entirely within the bell-body and having a clapper adapted to move in a direction away from the base against the bell member, substantially as described.

9. In a bell, a base having a peripherally-disposed fixed pointer and an offstanding post having a threaded stud, a circularly-adjustable bell member having speed-graduations and a central externally and internally threaded split boss adjustably engaging said stud, a threaded clamping cap or nut engaging the external threads of said boss, and ringing mechanism mounted within the bell-body and having a clapper adapted to move against the bell member, substantially as described.

10. In a bell, the bell-body having a circularly-movable bell member, striking mechanism mounted in a fixed position entirely within the bell-body, and means for adjusting the bell member by its circular movement positively in a direction toward and away from the striking mechanism, to vary the throw of the striker, substantially as set forth.

11. In a bell, the bell-body, having a bell member, ringing or striking mechanism mounted in a fixed position entirely within the bell-body on the base portion thereof, and means for adjusting the bell member in a direction toward and away from the base portion to vary the distance between the bell member and said ringing or striking mechanism, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

DAVID P. WOLHAUPTER.

Witnesses:
JOHN H. SIGGERS,
H. H. SIMMS.