April 17, 1951 W. H. SCOTT 2,549,248

GAME SCORING DEVICE

Filed May 14, 1949

Fig. 1

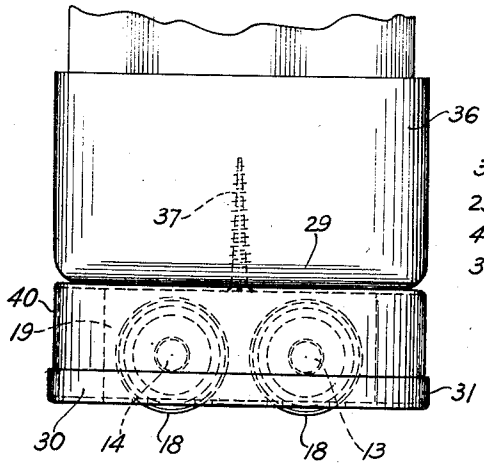


Fig. 2

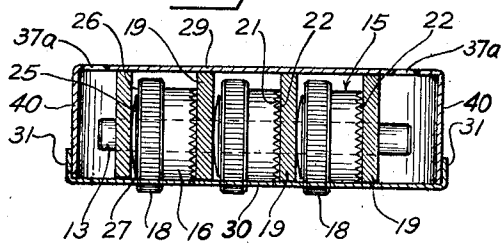


Fig. 3

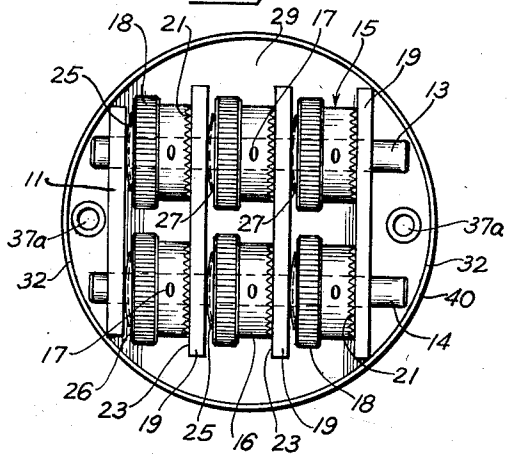


Fig. 5

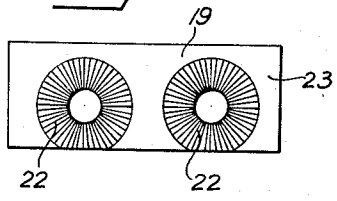


Fig. 4

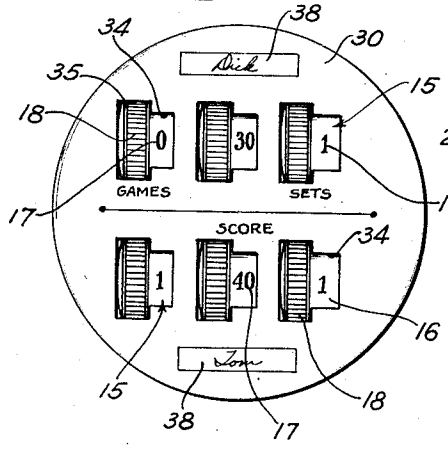


Fig. 6

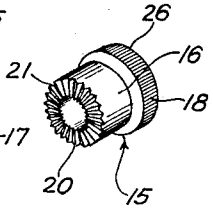
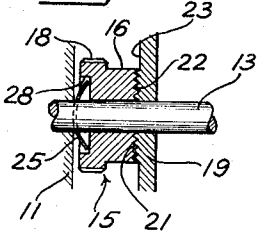


Fig. 7



WILLIAM H. SCOTT
INVENTOR

BY William E. Neely
J. Griffin Little
ATTORNEYS

Patented Apr. 17, 1951

2,549,248

UNITED STATES PATENT OFFICE

2,549,248

GAME SCORING DEVICE

William H. Scott, Rochester, N. Y.

Application May 14, 1949, Serial No. 93,329

9 Claims. (Cl. 235—117)

1

The present invention relates to a scoring device, and more particularly to a device of this type adapted to register the different elements of a tennis game. While the device of the present invention is primarily intended for use in connection with tennis, it is obvious that it can be used, without appreciable modification, for scoring other contests.

In tennis, as in other sports, it is a decided advantage for each contestant to be able, at all times, not only to ascertain quickly and accurately his particular standing, but also the standing of his opponent relative to the various features of the game. For this reason, the present invention provides a scoring device in which are mounted two groups of scoring members or elements, one group relating to one player and the other group to the other player. In the embodiment illustrated in the drawings, each group consists of three selectively and independently adjustable scoring elements to indicate "games," "score" and "sets" of a tennis match. Thus, by merely glancing at the device, the player can ascertain the scores of both contestants in the particular game, the relative number of games in the set won by each player, and the standing in the sets.

In this manner, the player is quickly and accurately appraised of his, as well as his opponent's progress. When a change is made in any feature of the game, the player adjusts the proper scoring element to bring the proper numeral into viewing position so that the device will always indicate the present status. When an adjustment has been made, the elements are securely, yet releasably retained in adjusted position until again positively moved by the user. The device is small and compact so that it is adapted to be attached to the end of the handle of a tennis racket where it is quickly and easily viewable. If preferred, the device may be provided with a pin or clasp for attachment to the clothing of the player, or a wrist band may be supplied.

The present invention has as its principal object the provision of a small compact scoring device for indicating selectively the various scoring features of a contest, such as a tennis match.

Still another object of the invention is the provision of a scoring device of the class described in which the various scoring elements may be readily, easily, and independently adjusted; and, when so adjusted, are held securely against accidental or unintentional movement.

Yet another object of the invention is the provision of a novel and effective holding means

2

which separately and indepenedntly retains the various scoring elements in their adjusted positions, but permits positive adjustment thereof when desired.

And a further object of the invention is the provision of a scoring device of the class described which is simple and rugged in construction, easy to operate, inexpensive to manufacture and highly effective in use.

To these and other ends, the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is an outside view of the scoring device of the present invention, showing one manner of attaching the device to a support, such as the handle of a tennis racket;

Fig. 2 is a sectional view through the casing or housing of the scoring device, showing the relation of the scoring elements and the holding or positioning means of the present invention;

Fig. 3 is a plan view of the parts illustrated in Fig. 2 with the cover removed, showing the arrangement of the elements for indicating the various features of the game;

Fig. 4 is a view similar to Fig. 3, but with the cover or closure member in position;

Fig. 5 is a view of one of the positioning plates, showing the arrangement of the ratchet teeth or elements formed thereon;

Fig. 6 is a perspective view of one of the scoring elements, showing the arrangement of the various parts and the ratchet elements or teeth which cooperate with the complementary elements on the plate illustrated in Fig. 5 to retain the scoring element releasably in adjusted position;

Fig. 7 is a horizontal sectional view through another embodiment of one of the scoring elements, showing the relation of the bowed spring for shifting the element axially to bring the ratchet teeth into holding relation to maintain the adjustment of the scoring elements.

Similar reference numerals throughout the various views indicate the same parts.

The scoring device of the present invention is embodied in the present instance, merely by way of illustration only, in a device adapted to indicate the various parts of a tennis match, such, for example, "games," "score," and "sets." It is obvious, however, that such a scoring device may be used eugally well in connection with other contests. For example, it may be used to indicate "runs," "hits" and "errors" of a baseball game or

the "score," "first downs" and "quarters" of a football game. While only three scoring elements are shown, it is obvious that a smaller or larger number may be used depending upon the game and the features thereof to be recorded. Therefore, the scoring device of the present invention has a wide range of uses, and the claims are not to be limited except insofar as necessitated by the prior art.

In the preferred embodiment of the invention, a pair of spaced end plates 11 and 19 support the ends of a pair of parallel shafts 13 and 14. Each shaft has loosely and rotatably mounted thereon a group or plurality of, in the present instance three, ring or sleeve-like scoring elements, generally indicated by the numeral 15. As all the elements and the associated parts are identical in structure, only one will be described in detail, and corresponding parts of the others will be designated by the same numerals. Each element 15 comprises a cylindrical portion 16 carrying numerals 17 thereon. A raised or enlarged knurled cylindrical portion 18 is formed at one end of the portion 16 for rotating the latter relative to its supporting shaft to bring the desired numeral into adjused or viewing position, as will be later more fully described. Between the elements 15, there is positioned a flat plate which is identical to the right end shaft-supporting plate 19, and is designated by the same numeral. Each plate 19, as well as plate 11, is of a length slightly greater than the spacing between the two shafts 13 and 14 so as to extend across or radially of both groups of elements 15, as best shown in Fig. 3. The plates may be provided with apertures through which the shafts 13 and 14 may extend, but the shafts are held stationary by means to be later described, when any element 15 is rotated to position one of the numerals 17 in viewing position.

The radial face or side 20 of each portion 16 has formed thereon axially extending teeth or ratchet members 21 arranged in annular form as best shown in Fig. 6. These teeth are adapted to cooperate and to engage with similar axially extended teeth 22 annularly and fixedly arranged on or formed integral with the side 23 of the adjacent plate 19 facing the side 20 of the scoring element 15. As each plate 19 serves a pair of scoring elements of the groups on the two shafts 13 and 14, it has two sets of teeth 22, as clearly illustrated in Fig. 5. Thus, each plate 19 will cooperate with corresponding elements 15 of the two groups to retain each element separately and independently in its adjusted position. When the teeth or ratchet members 21 of an element 15 engage the teeth 22 of the plate 19, the element is held securely in its adjusted position, as is deemed apparent. Thus, each element 15 is securely held against accidental or unintentional movement or adjustment unless positively moved by the operator or user.

When a change in a score is to be made, it is desirable to adjust the corresponding or appropriate elements 15 of the proper player so that the various elements will always indicate the present standing of the different game features. For this reason, it is desirable to provide means whereby ratchet elements 21 and 22 may be easily and momentarily rendered ineffective in holding the corresponding element to permit the adjustment of the latter to bring the proper numeral 17 into indicating or viewing position. To secure this result, each shaft 13 or 14 has mounted thereon a plurality of flexible members 25 positioned between a fixed member, such as the left end plate 11 or one of the plates 19, and the flat radial face 26 of the enlarged portion 18 of the scoring element 15. As the flexible member 25 reacts on the fixed member and engages the freely mounted scoring element, it tends to move the latter axially or to the right as viewed in Figs. 2–4, to bring the teeth 21 of portion 16 into engaging and holding relation with the teeth 22 on the cooperating fixed plate 19 as clearly illustrated in Figs. 2 and 3. Thus, the flexible member 25 yieldably retains the element 15 in adjusted position.

While the flexible member 25 is effective in retaining the teeth 21 and 22 in engaging relation, it is apparent that the member must be so constructed as to permit free, easy and independent adjustment of the various scoring elements 15. This flexible member 25 may be formed or made of any suitable, flexible, yieldable material such as a piece of rubber or similar material. However, in the preferred form, it is in the shape of a bowed metal spring which is convex towards the fixed member so that the rim portion 27 only engages the face 26 of the portion 18 to urge the element 15 yieldably toward the fixed plate 19 to engage the ratchet teeth 20 and 22. While the face 26 may be straight, it is preferably undercut or recessed, as shown at 28, Fig. 7 to assist in retaining the spring 25 in proper position relative to the scoring element 15, as is deemed apparent from the drawings.

When an adjustment is to be made, the knurled portion 18 is grasped and the elements 15 rotated on its supporting shaft. Such movement causes the teeth 21 to ride up on the teeth 22 and shift the element 15 slightly in an axial direction, or to the left, against the action of spring 25 to tension the latter. When the next numeral 17 has been brought into adjusted position, the teeth are again moved into meshing relation and the tensioned spring 25 shifts the element 15 axially and to the right to bring the teeth into meshing and holding relation to securely, yet releasably retain the element 15, and hence the numeral 17 in adjusted position.

The elements 15, plates 11 and 19 and the bowed springs 25 are assembled in proper relation on the shafts 13 and 14, as illustrated in Fig. 3. The entire assembly may then be inserted or positioned in a suitable housing or container which may be in the shape of the well-known pill box which is formed with a cylindrical side wall 40 one end of which is closed by a bottom 29. In order to retain the shafts 13 and 14 against axial movement, the shafts preferably extend across the housing so as to engage the wall 40, as best shown in Fig. 3. A closure member or cap 30 overlies the wall 40 and is formed with an annular rim 31 which engages the outer surface of the wall 40 frictionally to hold the cap 30 in assembled relation to cooperate with wall 40 and bottom 29 to retain the parts in position, as is deemed apparent from an inspection of Fig. 2. The cap 30 is provided with suitably arranged sight openings 34 through which the numerals 17 may be viewed, as best shown in Fig. 4. The shafts 13 and 14 are so positioned that the peripheries of the portion 16 carrying the numerals 17 are flush with the outer surface of the top of the cap 30. The latter is also provided with additional openings 35 through which the larger knurled portions 18 project to permit adjustment or rotation of the scoring elements 15 as is deemed to be apparent. While the portions 16 are flush with the outer surface of the top of the cap 30,

the top edges of the plates 19 engage the undersurface of the cap top, and the tops of the teeth 22 are cut off, as shown in Fig. 5.

A pin or clasp, not shown, may be attached to bottom 29 for securing the entire device to the player's clothing. On the other hand, a band, not shown, may be provided for applying the device to the wrist of the player. If the device is to be used in connection with a tennis racket, it may be secured directly to the end of the handle 36 thereof by means of screws 37 which extend through a registering holes 37a formed the bottom 29 and into the handle 36, as shown in Fig. 1. It is highly desirable that the entire device be extremely light in weight, not over one ounce. This is particularly true when the device is to be applied to a racket handle. For this reason, all parts are preferably formed of a suitable light-weight metal or a suitable light-weight plastic which may be made by die-casting, moulding, or any desired process. If desired, identification plates 38 may be provided on the cap 30 to designate the names of the players or teams competing. These plates are preferably of such material and construction that the matter written thereon may be readily erased or removed therefrom.

The plates 11 and 19 serve to support the shafts 13 and 14. As the plate 11 does not cooperate with teeth 20 of any of the elements, the plate 11 is not provided with teeth 22 as are the plates 19, see Fig. 5. If desired, the plate 11 may be replaced by another plate 19, but with the teeth thereof facing to the left, as viewed in Figs. 2 and 3. By means of this arrangement, the plates will be identical in structure, thus reducing manufacturing costs. While the housing and cap have been shown as circular in cross section, it is apparent, and it is contemplated, that they may be made in various shapes.

The present invention thus provides a scoring device in which a plurality of scoring elements are separably mounted for independent and selective rotation to indicate the various parts or features of a contest. When any element has been adjusted, it will be frictionally and yieldably held in its adjusted position until again positively moved by the operator, yet the element may be readily and easily adjusted when desired. The device is small, compact, light and formed of a few parts of rugged construction, and is easily operated and highly effective in use. While the scoring element with its ratchet teeth are adjustable, the plates 19 with their cooperating teeth are held stationary.

While one embodiment of the invention has been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is therefore not to be limited to the precise details described, but is intended to cover all variations and modifications which fall within the scope of the appended claims.

I claim:

1. A scoring device comprising, in combination, a score-indicating ring having scoring indexes formed thereon, a support on which said ring is mounted for rotation and axial movement, a fixed radially extending member positioned adjacent said ring, cooperating axially extending ratchet elements on said member and ring to retain the latter in adjusted position, and a spring engaging said ring to urge said ring yieldably and bodily axially toward said member to retain said elements in engaging relation.

2. A scoring device comprising, in combination, a housing formed with a sight opening, a pair of spaced end plates positioned in said housing, a shaft supported by said plates, a score-indicating ring mounted for rotation on said shaft and having scoring indexes formed thereon adapted to be brought selectively into registry with said opening, a plate fixed in said housing adjacent said ring, axially extending ratchet teeth formed on and in fixed relation on the side of said plate facing said ring, ratchet teeth formed on a radial face of said ring and adapted to engage the teeth on said plate to retain the ring in adjusted position, and a spring directly engaging the other face of said ring to urge the latter axially toward said plate to move said teeth into engaging relation.

3. A scoring device comprising, in combination, a housing formed with a sight opening, a pair of spaced end plates associated with said housing, a shaft supported by said plates, a score-indicating ring mounted for free rotation on said shaft and having scoring indexes adapted to be positioned in registry with said opening, a plate fixed in said housing adjacent said ring, annularly arranged axially extending ratchet elements formed on the radial face of said plate adjacent said ring, a radial side on said ring, annularly arranged axially extending ratchet elements formed on said side and adapted to engage with said first elements to retain said ring releasably in adjusted position, and a bowed spring member carried by said shaft and engaging said ring to move the latter toward said plate to engage said elements.

4. A scoring device comprising, in combination, a fixed shaft, a plurality of score-indicating rings mounted for separate and independent axial and rotative movement on said shaft, each ring being provided with scoring indexes, a separate fixed member associated with each of said rings, cooperating ratchet elements on each of said rings and the member associated therewith to retain each ring individually in adjusted position, and means engaging each ring to shift each ring separately to retain the ratchet elements associated therewith in releasable engaging relation.

5. A scoring device comprising, in combination, a fixed shaft, a plurality of score-indicating rings loosely mounted in aligned relation on said shaft for independent axial and rotative movement thereon, each of said rings having scoring indexes formed thereon, each of said rings having a radial face, a fixed plate positioned adjacent each face, axially extending cooperating ratchet members formed on each of said faces and the plate adjacent thereto to separately and independently retain each ring in adjusted position, and separate spring means engaging each ring to urge the latter yieldably axially toward the plate associated therewith to move said ratchet members into engaging relation.

6. A scoring device comprising, in combination, a fixed shaft, a plurality of ring members each of which is provided with scoring indexes, each ring being formed with apertured radial sides to mount each ring loosely on said shaft for individual rotation thereon, a fixed plate associated with each of said rings and positioned adjacent and substantially parallel to one side thereof, engaging axially extending ratchet elements formed on said one side of each ring and the adjacent side of each plate to retain said rings in adjusted positions, and separate bowed springs

carried by said shaft, each spring engaging the other side of one of said rings to urge the latter axially to move said elements into engaging relation.

7. A scoring device comprising, in combination, a hollow housing having a side thereof formed with aligned sight openings, a shaft mounted in said housing, a plurality of score-indicating members loosely mounted on said shaft for independent axial and rotative movement thereon, each of said members having a portion carrying score-indicating numerals viewable through one of said openings, an annular radial section on one side of each of said members and extending around said shaft, said shaft projecting through said sections and members for rotatably supporting the latter, a fixed plate positioned in said housing adjacent the section of each member, axially extending engaging ratchet elements formed on the adjacent sides of each section and plate to retain said members separably and independently in adjusted position with a numeral in registry with one sight opening, and bowed spring members carried by said shaft and engaging the other side of the members to urge the latter yieldably toward said plates to retain said ratchet elements in holding relation.

8. A scoring device comprising, in combination, a pair of parallel shafts, a support for said shafts, a plurality of score-indicating members arranged in aligned but spaced relation on each of said shafts for separate and independent rotation thereon, a fixed plate associated with and positioned adjacent a radial face of each of said members and extending radially of said shaft, axially extending ratchet elements formed on one side of each plate, cooperating axially extending ratchet elements formed on the side of each member facing said one side of said plate, said elements being adapted to engage to hold each member separately and independently in adjusted position, the members on one shaft indicating the scores of one contestant while the members on the other shaft indicate separately the scores of another contestant, and bowed spring members carried by said shafts and positioned in engagement with the other sides of each member to urge the latter yieldably toward the adjacent plate to move said elements into engaging relation.

9. A scoring device comprising, in combination, a housing one side of which is formed with groups of aligned sight openings, a pair of parallel arranged shafts mounted in said housing, separate groups of score-indicating members arranged in aligned but spaced relations on said shafts for separate and independent rotative and axial movement thereon, said members being provided with indexes adapted to be viewed separately through said openings, said groups of members indicating the score of different contestants, fixed plates mounted in said housing adjacent each of said members, means on said housing independent of said shafts for positioning said plates, engaging holding means on said plates and said members to retain the latter in adjusted position, and separate and independent spring means engaging each member to move the latter axially separately and independently toward the cooperating plate to maintain said holding means in engaged relation.

WILLIAM H. SCOTT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
198,934	Fields	Jan. 8, 1878
286,317	Lettelier	Oct. 9, 1883
1,421,070	Deichmann	June 27, 1922
1,644,471	Hagerman	Oct. 4, 1927
1,711,222	Bronner	Apr. 30, 1929
1,720,085	Meyers	July 9, 1929
1,924,479	Balch	Aug. 29, 1933
1,940,134	Levin	Dec. 19, 1933
2,031,291	Wahlin	Feb. 18, 1936
2,150,525	Stutz	Mar. 14, 1939
2,349,452	Musolino	May 23, 1944