March 26, 1940. G. R. CHERVENKA ET AL 2,194,786

BASKETBALL BACKSTOP

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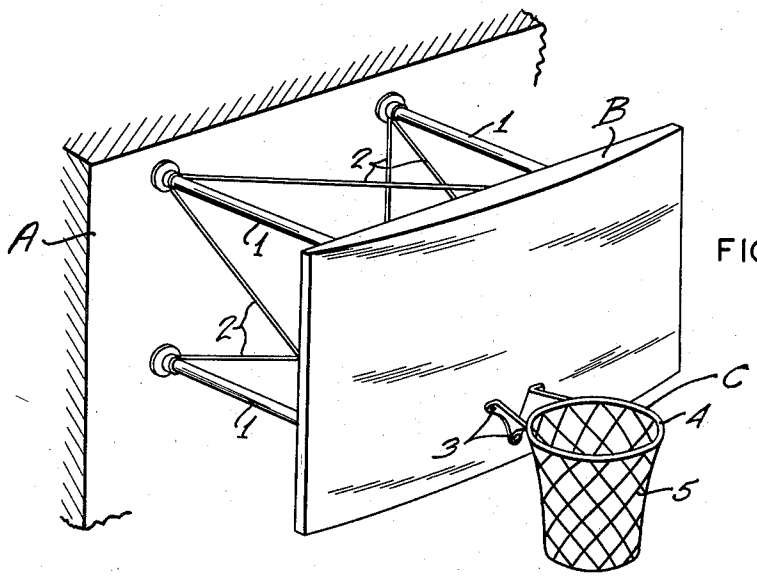


FIG. 1.

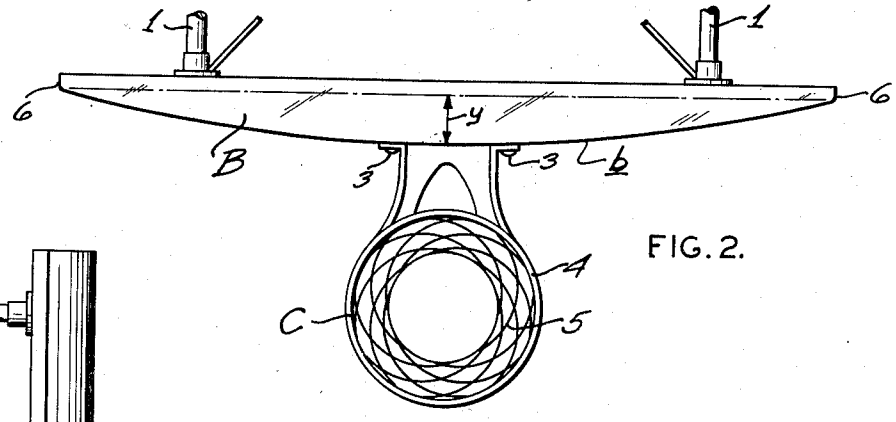


FIG. 2.

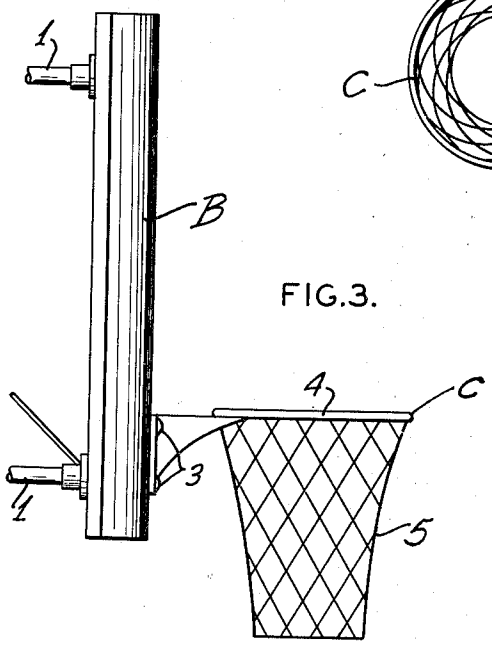


FIG. 3.

INVENTORS
GEORGE R. CHERVENKA
LEN A. MAUNE
BY
ATTORNEY

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BASKETBALL BACKSTOP

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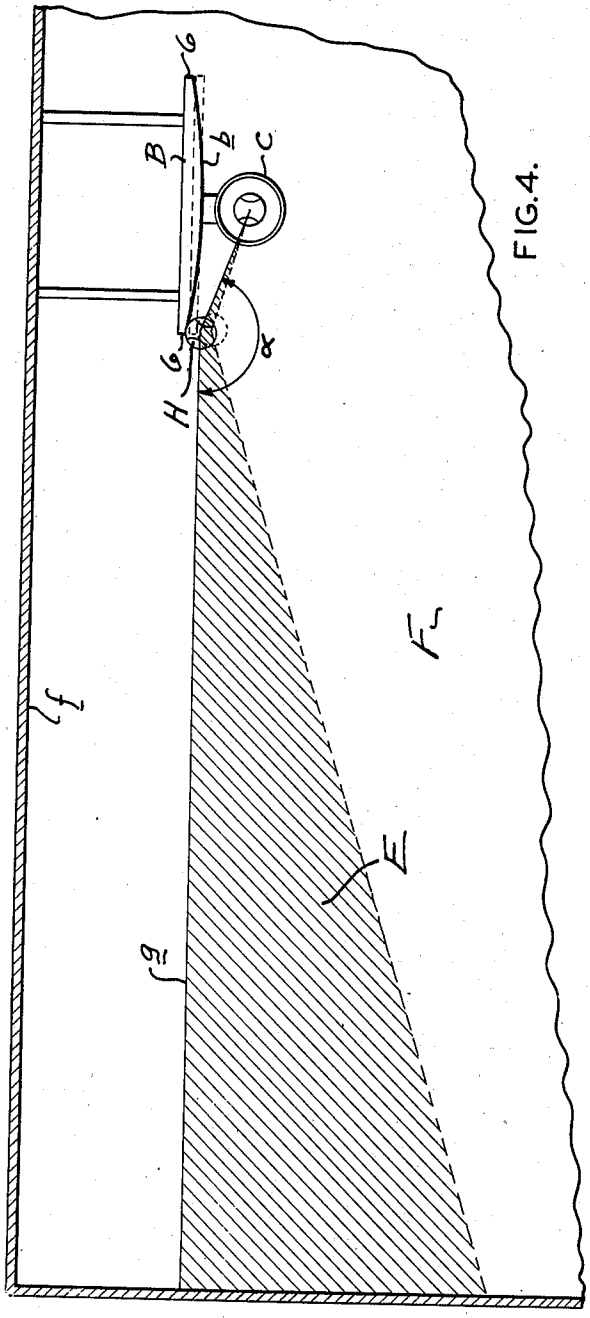


FIG. 4.

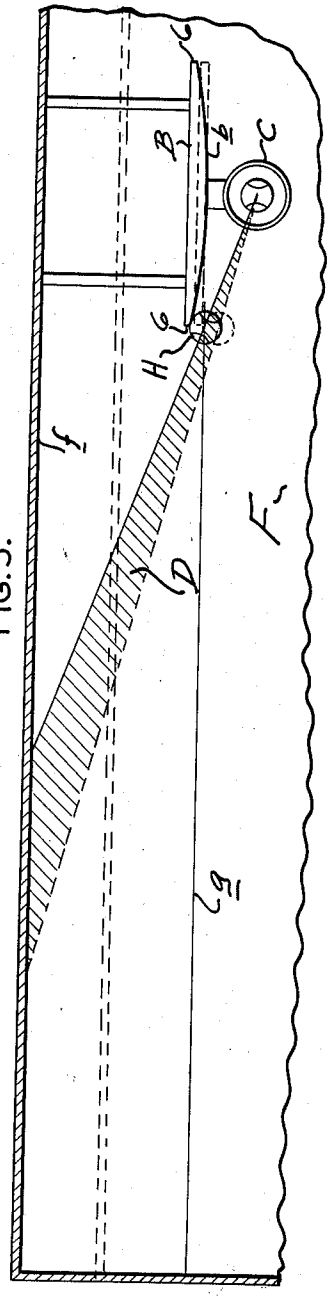


FIG. 5.

INVENTORS
GEORGE R. CHERVENKA
LEN A. MAUNE

BY

ATTORNEY

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BASKETBALL BACKSTOP

George R. Chervenka, St. Louis, and Len A. Maune, Richmond Heights, Mo., assignors to Fred Medart Manufacturing Company, St. Louis, Mo., a corporation of Missouri

Application March 31, 1939, Serial No. 265,126

6 Claims. (Cl. 273—1.5)

This invention relates to a certain new and useful improvement in basketball backstops.

Basketball is a popular athletic game played upon a court or field by two opposing teams of five regular players each, who contest with each other to toss an inflated ball into opposite goals resembling and designated baskets suitably supported in elevated position adjacent the opposed ends of the court or field upon backstops commonly called banks. The playing field or court is of fixed or prescribed and restricted size, fifty feet by ninety-four feet being standard maximum dimensions and thirty-five feet by sixty feet being standard minimum dimensions according to present rules, and the game, from its invention or origination, has been played with a flat backstop bank.

Certain systems of play have been set up by various athletic directors and coaches which place all five men comprising a team on the defensive end of the court. Consequently, with the flat type of standard bank, the scoring range is confined to a certain area, which may be more or less skillfully defended by the particular team's five players.

To open up the play, the rules of the game have been changed from time to time, and at present the rules allow four feet at each end of the court beyond or to the rear of the face of the particular bank for use as additional playing area. However, with the flat type of standard bank, goals cannot be scored from such additional playing area, which is used mainly for passing or team play to put the ball suitably in position in front of or relatively to the particular bank for scoring.

The object of our invention is both to enable scoring from a large portion of such additional end-area and to generally increase the range upon the court for scoring, thereby correspondingly spreading out the area or range of defensive play and increasing or enlarging the zone that must defensively be guarded or covered by each individual player.

Such object is accomplished by, and our invention resides in, the unique backstop bank illustrated in the accompanying drawings, in which—

Figure 1 illustrates in perspective a backstop including a bank of our invention in installed and associated playing position with a basket goal;

Figures 2 and 3 are, respectively, plan and elevational views of the installed bank and associated goal; and

Figures 4 and 5 illustrate the bank and goal in association with a fragmental layout of a court or playing field.

Referring now in more detail and by reference characters to the drawings, which illustrate a preferred embodiment of our invention, A designates a support for suitable elevated mounting either in a gymnasium or other indoor-court enclosure or upon an outdoor court or playing field, and fixed, in turn, on the support A by suitable extension-bracing of any standard or approved type comprising, in the present instance, bars 1 and strengthening or reinforcing guy-wires or rods 2, is a basketball bank B of our invention.

The bank B is preferably oblong-rectangular in shape or contour and may be made or built of wood, glass, steel, or other suitable material and in such respects does not differ materially from present day bank construction. However, bank B is so uniquely constructed as to present toward the playing area of the field F a so-called rebound face *b* having preferably from end to end of the bank B the continuous curved or convex contour of a peripheral segment of a right cylinder, as best seen in Figures 1 and 2.

Suitably fixed, as by bolts 3, to, and in proper playing location upon the rebound or forwardly presented face *b* of, the bank B, is a standard goal C comprising a bracket-supported ring 4 and a net or basket 5.

Now, a standard present day flat bank, such as is indicated in dotted lines in Figures 4 and 5, has a length of six feet and a height of four feet and consequently an impact or rebound area of approximately twenty-four square feet. The curved or convex rebound face *b* of a bank B of the same height has substantially the same area when produced or effected by the employment of a fourteen foot radius. Such a bank-face *b* would have a circumferential length of approximately six feet and the bank B on its rear face would accordingly have a longitudinal dimension or length of slightly less than seventy-two inches or, more precisely, 71.44". These dimensions, we may here say, are what we believe to be ideal, but may be varied to suit different conditions or rules, the curvature or convexity of the rebound face *b* of the bank B being such as to reduce what are known as coffin corners or blind spots on the court, from which it is now impossible to score goals.

In such regard, we might add here that the radius of curvature of the bank-face *b* should preferably be such that a basketball H, thrown from any point along a line *g*, as shown in Figure

4 and presently defined, so as to strike the bank-face *b* just inside its proximate vertical margin 6, will be deflected into the basket or goal 5. Under such circumstances, geometrically considered with some precision or accuracy, the angle α (alpha) may be referred to, for present purposes, as the angle of rebound. The radius of curvature may then be expressed as follows—

$$R = x \cdot \sec \phi$$

wherein

R is radius of curvature;
x is half the transverse dimension of the bank, i. e., chord of the arc;
ϕ (phi) is half the angle of rebound, i. e., half the angle α (alpha).

For practical purposes, with the present standard dimensions of bank, this radius R of bank curvature should be, under ideal conditions, as we have said, substantially fourteen feet; the actual transverse dimension of the bank B will then be 71.44", providing an arcuate or circumferential length for the bank-face *b* of exactly six feet, the radial deflection *y* being 3.84".

Figures 4 and 5 fragmentally show the goal-end of a typical basketball court F of maximum dimensions. The end line *f* of the court F is located four feet rearwardly, as it may be said, from the line *g*, which latter extends from side to side transversely of the court F and across the front face *b* of the bank B, as shown. And from an observation of Figures 4 and 5, the additional portion of the field or court F that is by our unique bank B made available for scoring-play becomes quickly evident. For instance and as an example, the shaded area E in Figure 4 is the additional range resulting from, and made available by, the use of a bank B having substantially the standard dimensions recited for a bank shot or a score which may be made by using the bank B as a means for scoring a goal. Such additional area or range E is approximately 360 square feet, or a total of 720 square feet at each end of the court F, assuming that the ball H contacts the bank B approximately three inches from its adjacent or proximate margin 6.

Again, for example, the shaded area D in Figure 5 is the additional range resulting from, and made available by, the use of a bank B having substantially the standard dimensions recited for a straight shot to the goal C from within the court or playing field end-zone G bounded by the lines *f* and *g*—an area unavailable for scoring play with a flat present day standard bank. It will be understood that the phrase "straight shot" is employed to describe a throw directly into the goal C from the end-zone G without contacting the bank B. Such additional end area or range D is approximately 13½ square feet, or a total of 27 square feet at each end of the particular court or playing field, figured on the basis of a convex bank-face *b* having a 14 foot radius and a 6 foot arc.

It thus is clearly evident that our present backstop bank is so uniquely constructed as to very materially increase the area of the court available for both offensive and defensive play and correspondingly increase or enlarge the zone that must defensively be guarded or covered by each individual player of a particular team, thus making the game appreciably faster and of greater spectator interest.

Further, by the employment in the game of a bank B, the convexity of the rebound face *b* of the bank B effects a large so-called recession into the end-zone G of the vertically disposed side margins of the bank B and permits considerably more unobstructed visibility of the goal C, with the result that the mental hazard of attempting a shot from a side line of the court, directly parallel to the bank, is eliminated and the visibility to spectators largely increased.

We might further add that convexing the rebound or impact face *b* of the bank B results in a unit of great strength and rigidity, and it will, of course, be understood that the mounting of the bank B may be readily changed to meet installation and location conditions incident to the particular court or playing field and that changes and modifications in the form and construction of the backstop and bank may be made and substituted for those herein shown and described without departing from the nature and principle of our invention.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A basketball backstop including a bank constructed to present to the playing field a rebound face cylindrically curved convexly from and on both sides of a goal supported centrally upon, and spaced forwardly from, said face.

2. A basketball backstop including a bank dimensioned for elevated location within the boundaries of a playing field at a predetermined distance inwardly from an end, and with its opposite side margins presented toward and spaced from the opposite side margins, of the field, the bank having a cylindrically convexed front face having an arc of curvature that would cross the adjacent end-portion of the field for increasing the ball-throwing area of the field for goal scoring play.

3. A basketball backstop including a bank dimensioned for elevated location within the boundaries of a playing field at a predetermined distance inwardly from an end, and with its opposite side margins presented toward and spaced from the opposite side margins, of the field, the bank being provided with a front face having the convex contour of a peripheral segment of a right cylinder having an arc of curvature that would cross the adjacent end-portion of the field for increasing the ball-throwing area of the field for goal scoring play.

4. A basketball backstop including a bank dimensioned for elevated location within the boundaries of a playing field at a predetermined distance inwardly from an end, and with its opposite side margins presented toward and spaced from the opposite side margins, of the field, the bank being provided with a front face of cylindrically convex contour for increasing the playing area of the field laterally of said front face for goal scoring play.

5. A basketball backstop including a bank dimensioned for elevated location within the boundaries of a playing field at a predetermined distance inwardly from an end, and with its opposite side margins presented toward and spaced from the opposite side margins, of the field, said bank being provided with a front face having from one side margin to the other of the banks a cylindrically convex contour so that a ball thrown from points along a line extending transversely of the field from side to side and across said front face and striking said face just inside its proximate side margin will be deflected into a goal supported upon, and spaced forwardly from, said front face.

6. A basketball backstop including a bank having a front face transversely cylindrically convexed presented toward the playing field and a basket supported upon said face and spaced radially outwardly therefrom by a predetermined distance in relation to the transverse width and radius of curvature of said face such that the radius of curvature is equal to one-half the product of the transverse width of said face and the secant of the supplement of the angle between the radius of said face at the outer side margin of said face and a straight line between such margin and the center of the basket.

GEORGE R. CHERVENKA.
LEN A. MAUNE.