

[54] **TONAL PERCUSSIVE MUSICAL
INSTRUMENT**

[76] Inventor: **Richard A. Waters**, 1462 Darby
Rd., Sebastopol, Calif. 95472

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[51] Int. Cl.² **G10D 13/08**

[58] Field of Search 84/402, 403, 406-410,
84/404, 405; 116/141, 169; 46/189, 191

[56] **References Cited**

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Primary Examiner—Joseph W. Hartary

Assistant Examiner—John F. Gonzales

[57]

ABSTRACT

A musical instrument related to percussive and string instruments. It has a resonator or echo chamber with an upright neck or opening for sound. Metal rods of different tones radiate from the resonator and are played by mallets, bows, or hands. The resonator contains water, providing unusual tones and an echo effect.

8 Claims, 7 Drawing Figures

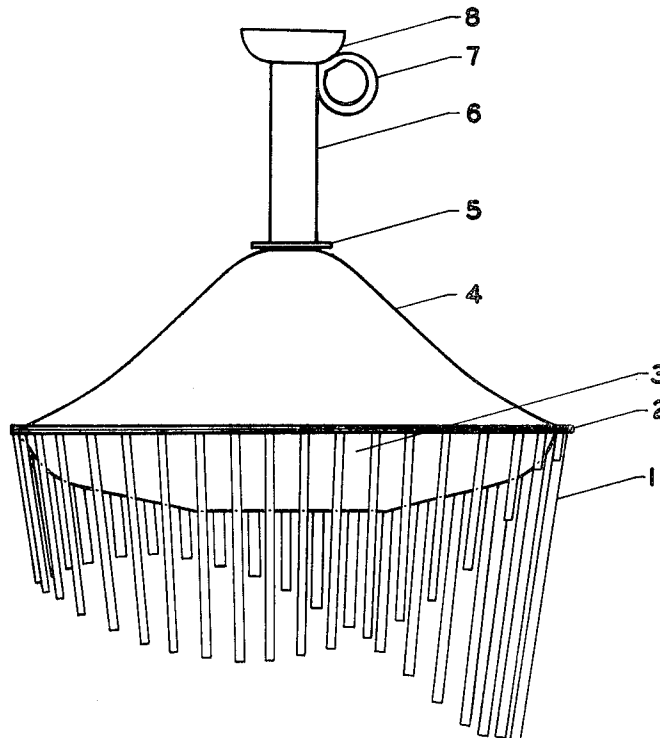
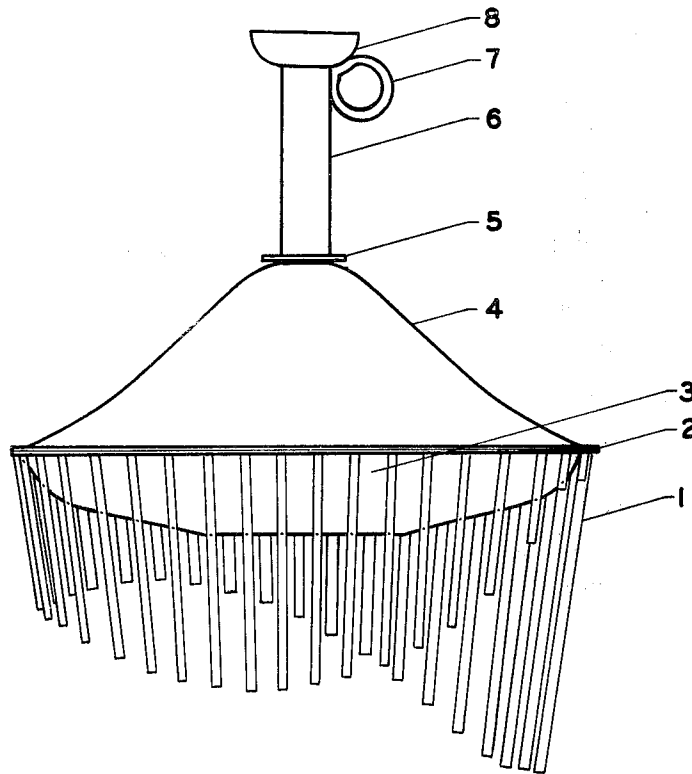


FIG. 1



INVENTOR

Richard Waters

ATTORNEYS

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FIG. 2

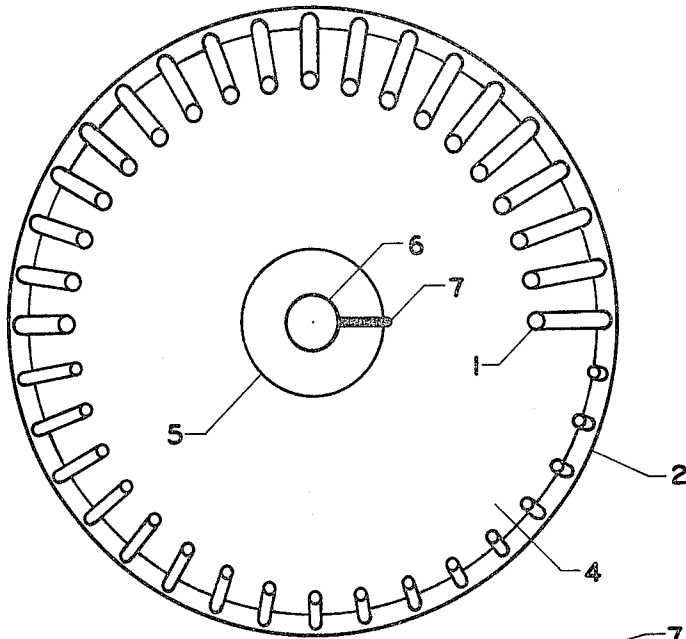
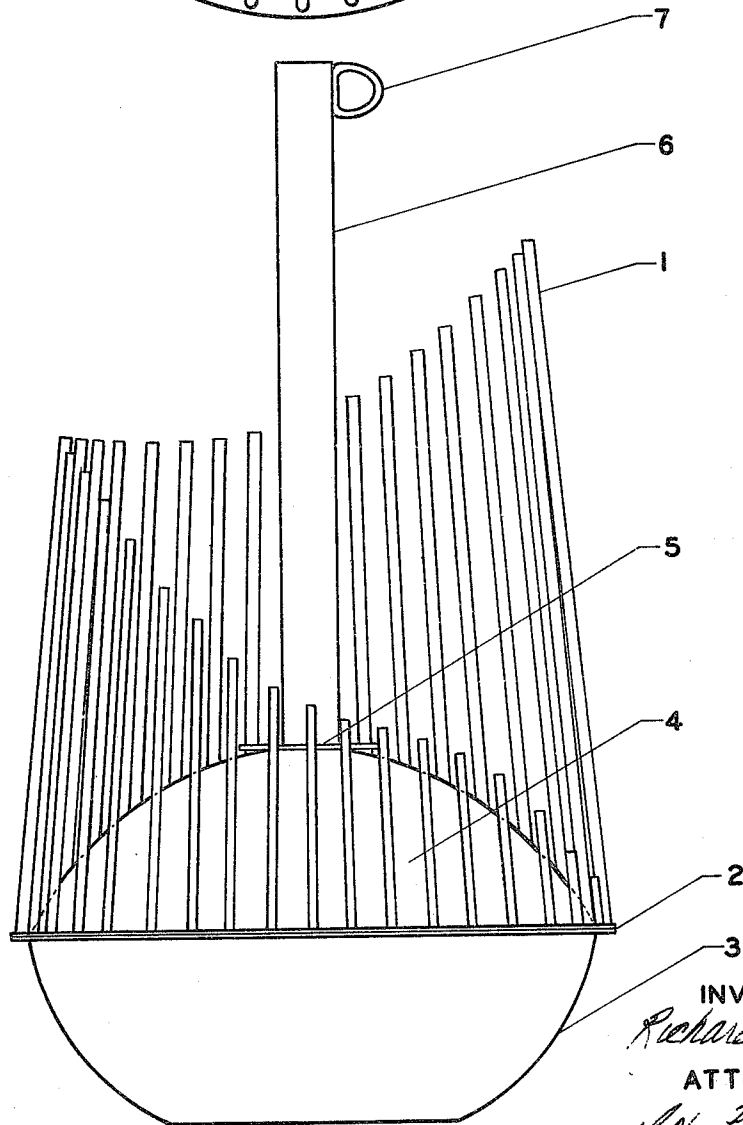


FIG. 3



INVENTOR

Richard Waters

ATTORNEYS

EN PRO PER

FIG. 4

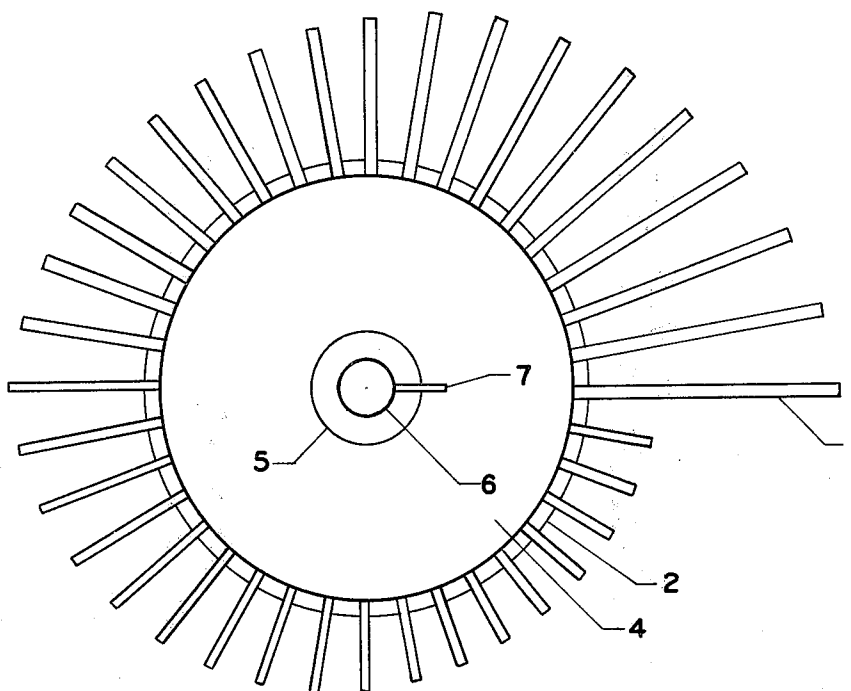
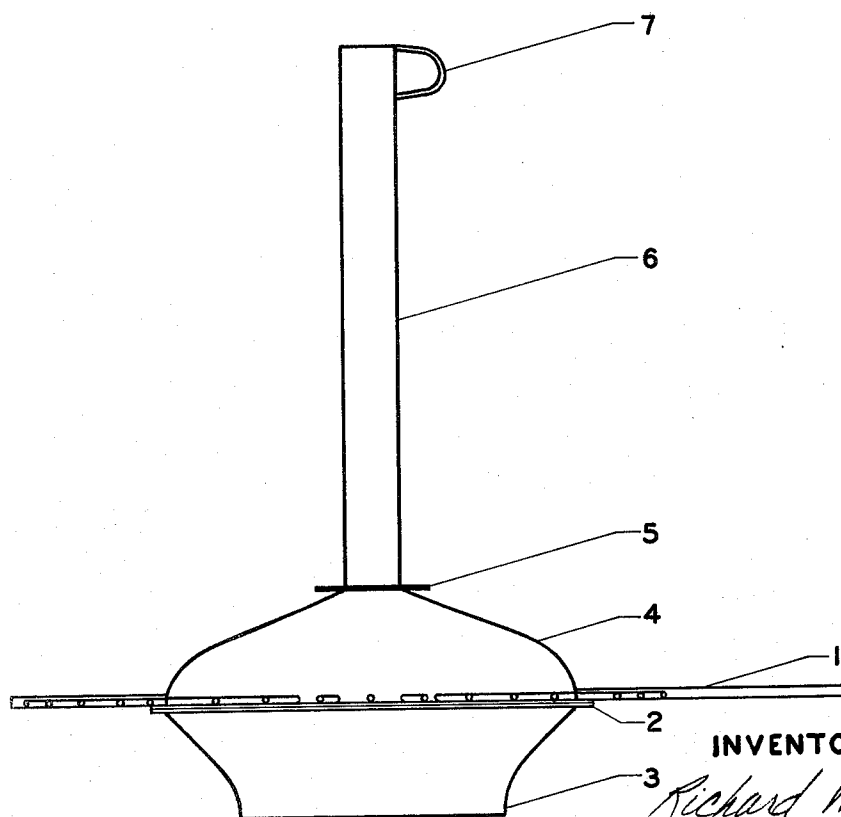


FIG. 5



INVENTOR

Richard Waters

ATTORNEYS

In Pro Per

FIG. 6

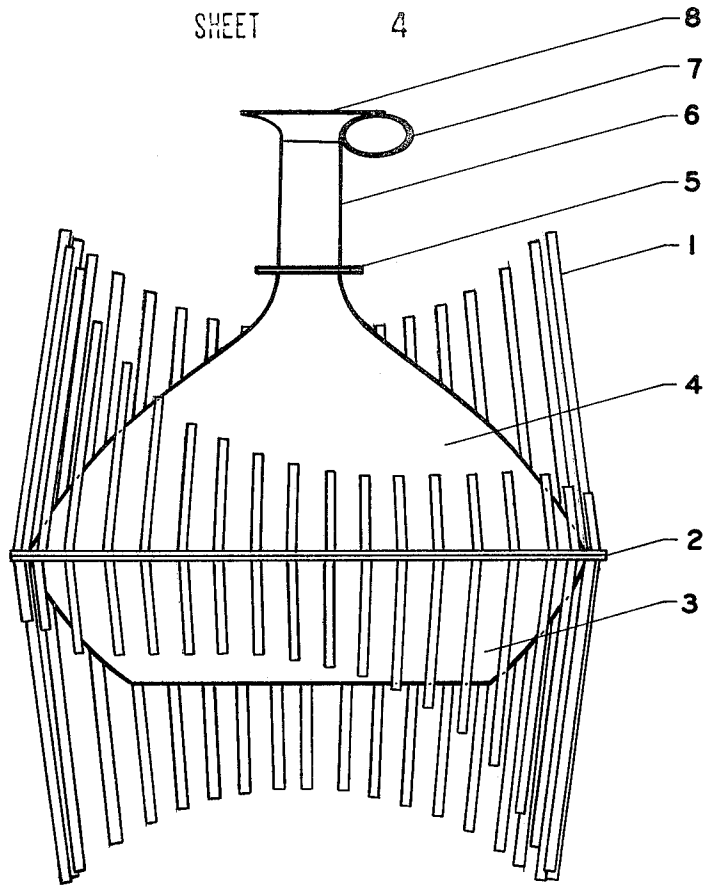
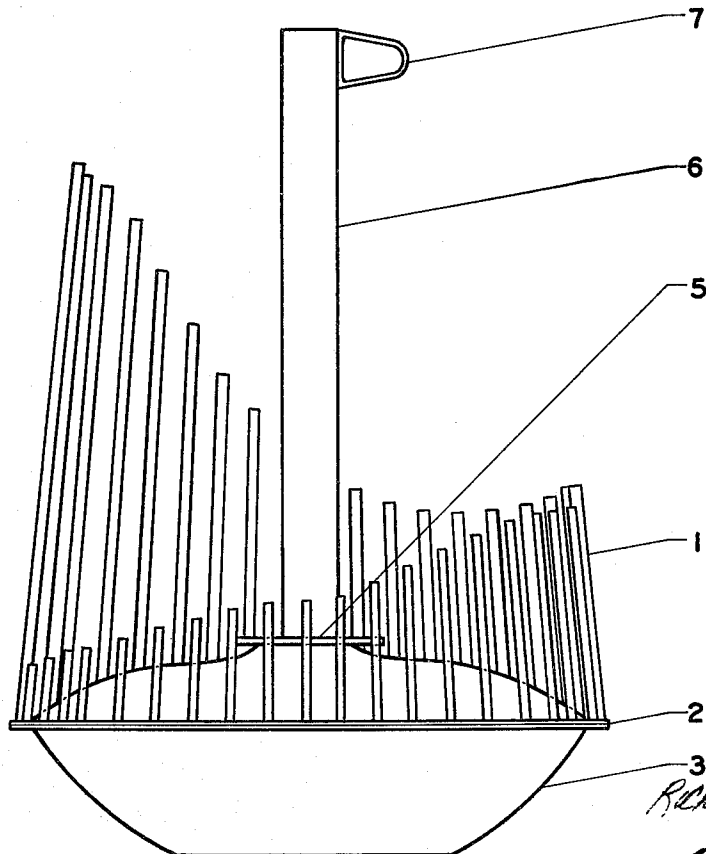


FIG. 7



INVENTOR
Richard Waters
ATTORNEYS
IN PRO P

TONAL PERCUSSIVE MUSICAL INSTRUMENT

This invention is novel in construction and sound capabilities. It has great flexibility in its use. The invention is an advance over prior art in many aspects.

The invention has a radial design making it more convenient for playing and is also less bulky than xylophone-type instruments. This inventions can be played with a horsehair bow, or with hands, instead of only with mallets.

The curvilinear design of the invention makes it easy to play the various notes on the tonal rods by merely twisting the instrument and bowing or striking with counter-turns.

An object of this invention is to produce new musical tones and new quality of sound by making use of a wider range of harmonics.

Another object is to make use of water as a sound medium.

Another feature is to produce a portable and compact musical instrument which is simple to play.

Other objects and feature of this invention will become apparent after reading the following descriptions of the accompanying drawings.

This invention is constructed of metal or other appropriate material. A hollow body with a top and bottom surface acts as a resonator. The resonator contains water or other liquid and has an aperture in the top surface. A neck or hollow tube is attached to the resonator at the point where the aperture lies. Around the perimeter of the resonator metal rods or tubes of varying lengths and diameters are attached. The metal tonal rods each produce different notes depending on their construction and are possible to tune. The tonal rods radiate outwards and are struck with mallets, played with a horsehair bow, or with hands. The invention can be held in one hand while being played or can be suspended.

Several embodiments of the invention will now be described, reference being made to the following drawings given by way of example and by no means in a binding or restrictive sense. In these drawings:

FIG. 1 is a vertical view of the musical instrument with tonal rods radiating downwards, and a short neck with a bell.

FIG. 2 is a top view with inward-radiating tonal rods.

FIG. 3 is a vertical view of the musical instrument with tonal rods upwards.

FIG. 4 is a top view of the musical instrument with outward-radiating tonal rods.

FIG. 5 is a vertical view with outward-radiating tonal rods and long neck.

FIG. 6 is a vertical view with two sets of tonal rods radiating downwards and upwards, a short neck, with a bell, and a steep resonator.

FIG. 7 is a vertical view with upward-radiating tonal rods, a long neck, and flat resonator.

The resonator 4 may be constructed in a wide variety of shapes (see FIGS. 1,2,5,6,7).

The resonator 4 is constructed of rigid metal except for the base. The resonator 4 is a hollow body having a flat, flexible bottom surface and a rounded top surface with an aperture at the apex. Preferably the walls of the resonator 3 flare slightly outward from the circular base. The resonator walls proceed upward to the plane where the tonal rods 1 are attached, then angle inward and upward towards an aperture 5 at the center top of the resonator 4.

The resonator 4 has a flat bottom surface 3 constructed of flexible metal which acts as a diaphragm, bouncing vibrations back up towards the top of the resonator 4. The metal must be thin enough to flex and allow the bottom surface to vibrate sympathetically to various tones and harmonies, thus giving unusual sound qualities.

The resonator 4 contains water or other appropriate liquid to affect its sound capabilities. Water is poured through the neck 6 and aperture 5 at the top of the resonator 4. A small quantity of water is contained inside the resonator 4 and lies upon the diaphragm or bottom surface 3.

The resonator 4 must be water-tight and of non-corrosive material to prevent rust and other deterioration due to moisture.

There is an aperture 5 in the center top of the resonator 4. The aperture 5 can vary in size, and is determined by the range of tone desired. The variances affect the tone produced. The wider the diameter of the aperture, the lower the tone.

The neck 6 is attached to the resonator 4 extending the aperture 5. The neck 6 is constructed of a metal cylindrical tube and is attached to the resonator 4 at one end. The neck 6 extends upward and may project straight up or slightly bent to facilitate handling. The longer the neck the lower the tone. The neck 6 may be attached so that it can be interchangeable with others of varying heights and angles. The neck 6 acts as a means to put water into the resonator 4 and by which the interior sound escapes.

Tonal rods 1 radiate outwards along the perimeter of the resonator 4. They can be attached at one end directly to the resonator 4 or to a collar 2. The tonal rods 1 can be attached by means of welding, or can be threaded and bolted into the collar 2. The tonal rods 1 can radiate downwards (FIG. 1), upwards (FIGS. 3 and 7), horizontally (FIG. 5), or at any angle or combination of angles (FIG. 6). This makes for a generally flexible design with the ease and preference of the player in mind.

The tonal rods 1 are of varying heights and diameters spaced around the collar 2 or perimeter of the resonator 4. They are arranged in graduating lengths. There may be any number of tonal rods 1. Each tonal rod vibrates of its own characteristic frequency when activated. The tonal rod having the lowest characteristic frequency extends to a higher point than any of the others. Lengths of the tonal rods are selected so that each will vibrate at a predetermined frequency, so that any desired scale of frequencies may be attained. It is also possible to tune each tonal rod 1 so as to vibrate at the frequency of a note on the conventional scale, so as to adapt it to play pieces of written music.

The tonal rods 1 are struck by a mallet, or played with a horsehair bow. The horsehair bow is brought into perpendicular contact with the rods at different points using varying speeds and pressures in order to excite the various tones and the harmonics of those tones.

The instrument can be held in the hand or suspended by a loop 7 at the upper end of the neck 6. A bell 8 is attached at the top of the neck 6 which acts as an amplifier for the sound coming up the tube.

Vibrations excited by the motion of the tonal rods 1 are transmitted from the surface of the resonator 4 to the interior. The vibrations travel down through the

water to the diaphragm or flat, flexible bottom surface 3 and bounce back up through the water again.

The construction and density of metal surrounding the aperture 5 creates a nodal point which reflects the sound vibrations down toward the water and the diaphragm. Sound is modified by means of these bouncing motions and the difference in velocities of vibrations traveling through water and air within the resonator 4.

The description is the preferred embodiments of this invention, but many variations and modifications will be brought apparent to those skilled in the art, therefore, this invention is not to be construed as limited to the particular forms disclosed herein, since those are to be regarded as illustrative rather than restrictive. It is the patentee's intent to cover all changes and modifications of the example of the invention disclosed which does not constitute departures from its spirit and scope.

I claim:

1. A musical instrument, comprising a resonator having a hollow body with a flat flexible bottom surface and a rounded top surface, an aperture formed in said top surface at the apex, liquid contained inside said resonator, a neck including a hollow cylindrical tube open at both ends rigidly attached at one end to said resonator covering said aperture and projecting upwardly, and a plurality of tonal rods of various lengths and diameters rigidly attached at one end around the perimeter of said resonator.

2. A musical instrument as set forth in claim 1 in which said plurality of tonal rods graduate in length and diameter each producing its own characteristic note rigidly attached at one end to said resonator arranged in a manner as to effect a graduating system of tones.

3. A musical instrument as set forth in claim 1 in which a loop is attached to the top of said neck for sus-

pension and handling purposes.

4. A musical instrument as set forth in claim 1 in which a bell is attached to the top end of said neck.

5. A musical instrument, comprising a metal resonator having a hollow body with a top and bottom surface, an aperture in the top surface of said resonator liquid contained inside said resonator, a hollow neck open at both ends and rigidly attached at one end to said resonator covering said aperture and projecting upward, a mounting means including a tonal rod collar of narrow metal rigidly attached to said resonator encircling the perimeter thereof, and a vibrating means including a plurality of tonal rods of various lengths and diameters producing different tones rigidly attached at one end to said mounting means and extending outward.

6. A musical instrument as set forth in claim 5 in which said mounting means comprises a narrow metal collar with spaced holes through the surface thereof and rigidly attached around the perimeter of said resonator, and said vibrating means including a plurality of tonal rods with one end bolted through the holes of said mounting means and radiating outwardly.

7. A musical instrument as set forth in claim 5 in which said mounting means is a metal collar with threaded holes at spaced intervals and rigidly attached around the perimeter of said resonator, and said vibrating means including a plurality of tonal rods threaded at one end which screws into said mounting means.

8. A musical instrument according to claim 5, in which said vibrating means comprises a plurality of hollow tubes of various lengths and diameters attached to said mounting means at one end and radiating outward.

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