

Anonymous Grading Number: _____

American University Washington College of Law
Fall 2023 Final Examination
LAW-688-001 Patent Law

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Instruction Page

1. The length of the examination: 3 hours
2. This exam consists of 6 pages including the instruction sheet(s). Please be sure your exam is complete.
3. This exam is open book. Students are permitted to access materials stored on their computer hard drives, but are not permitted to access the internet.
4. Multiple Choice: Please use the scantron sheet to mark your answers.
5. Additional instructions: See the next page.

WCL Exam Policies

1. You must use your Fall 2023 Anonymous Grading Number (AGN). Write it on the blue book, exam questions, and any scrap paper. **Do not use your name, student ID number, or social security number.**
Do not contact your professor about the exam until after grades have been released.
2. No corrections will be made once the exam is distributed. If there is a typo or ambiguity in a question, state your assumption and answer accordingly. **Please note: Proctors are not allowed to answer questions about the examination.**
3. All materials, including the **questions, handwritten answers (if applicable), and scratch materials**, must be placed inside the exam envelope and returned to the proctor at the end of the exam.
4. Students are permitted to use one electronic device (laptop or compatible tablet). The use of additional electronic devices (cell phones, mp3 players, smart watches, tablets, etc.) is prohibited during the exam.
5. Graduating Students: Please check graduating at the top of your exam envelope.
6. You are reminded that the WCL Honor Code applies to this examination.

General Instructions

The following instructions apply to all questions below.

Patents. Unless otherwise stated, “patent” means a United States utility patent.

Technical Facts. You must accept as true any technical fact stated in this exam, even if it appears untrue in reality. (This is necessary because I cannot invent truly new technologies for the exam.) Basic background facts such as laws of physics may of course be used even if they are not directly recited, as long as they do not contradict the facts given in the question.

Claim Construction. Analyze the construction of a patent claim term only if the outcome of another legal issue depends on the claim construction, and if there is a likely substantial dispute over the term. In your analysis, identify how both sides would want the claim construed, the best arguments in favor of each side’s construction, and the impact of each construction on the other legal issue.

Word and Time Limits. The times given for each problem are just suggestions; you may allocate time on this exam as you wish. The word limits are mandatory. They are also very generous, and an excellent answer would contain far fewer words.

Address All Issues. Even if you think a particular issue is dispositive, **do not stop your analysis.** For example, even if you think a patent is invalid, you should continue to consider whether it is infringed.

Answer Quality. Credit on this exam will be given for clarity, organization, and conciseness in writing. You are highly encouraged to use font styles and paragraph breaks to make your answers as clear and readable as possible.

Facts (15 minutes to read)

Background

In very simplified terms, a musical wind instrument produces sound by causing air to vibrate inside a tube. In designing a wind instrument, then, there are two key questions: (1) how to cause the air to vibrate, and (2) how to make the length of the tube adjustable to produce different pitches or notes.

To produce vibrations, a double-reed instrument like an oboe uses two pieces of rigid but flexible material (the reeds) next to each other and covering the opening of the instrument's tube body. Blowing into the tube causes the reeds to vibrate back and forth. Brass instruments like trombones use a completely different mechanism (the player buzzes their lips at the mouthpiece opening of the tube).

There are also a few mechanisms for changing the tube length. An oboe has holes in the tube that the player opens and closes, effectively changing the tube's length. Trombones have a sliding portion of the instrument tube that the player can move back and forth.

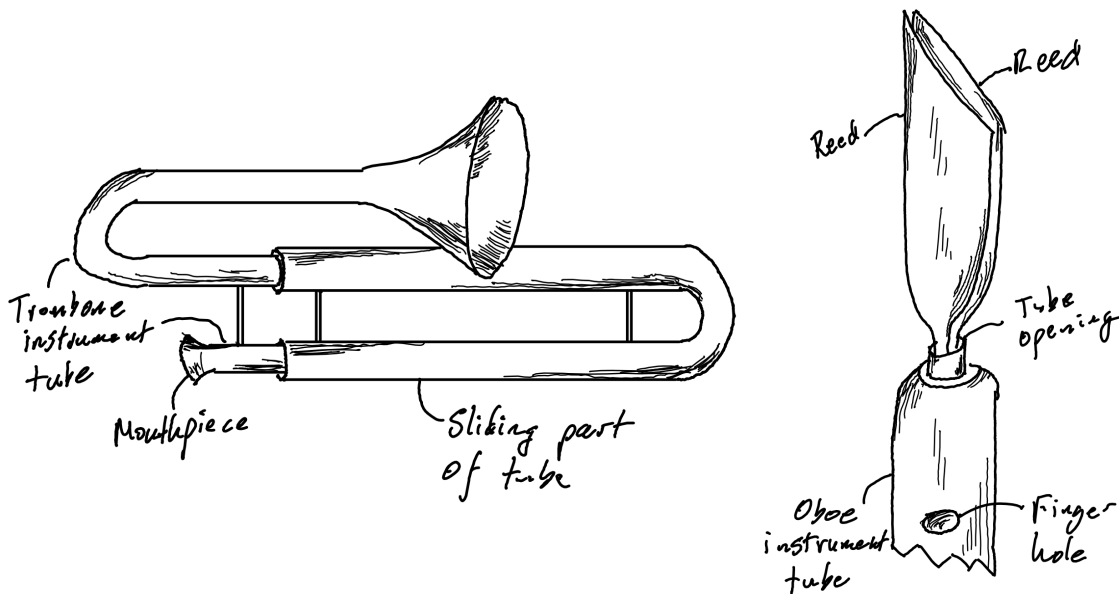


Figure 1: Diagrams of a trombone, and of the mouthpiece end of an oboe.

The Invention

In 2003, Susannah Smith is a college student at American University, and takes a music class. She learns all the above information. Her final project is to invent and present a new musical instrument. She takes a deflated rubber balloon, cuts two pieces out of it, and attaches them to the tube so that the flaps are next to each other and cover the end of a piece of plastic pipe she

had on hand. Blowing into the pipe, Susannah finds that the balloon pieces vibrate against each other, producing a distinctive buzzing tone. She attaches a second, slightly wider pipe around the device, making it able to slide up and down to make the instrument longer or shorter.

Susannah presents her instrument, which she calls the “buzzy tube,” to the class of 30 students. The class loves it, but Susannah also discovers that, as the balloon rubber warms up while she plays it, the instrument’s pitch changes over time in ways that make it not imperfect as a musical instrument.

Twelve years later in 2015, Susannah (still living in DC) remembers the buzzy tube she invented in college. Having no balloons on hand, she cuts pieces off of a plastic bag instead. The results are far superior to what she remembered: The instrument produces clearer pitches that no longer change over time. Before showing her new instrument to anyone, she files a patent application on June 1, 2015. The patent is granted, without intervening rejections, on January 1, 2018, and reads in relevant part as follows.

Musical Instrument Apparatus

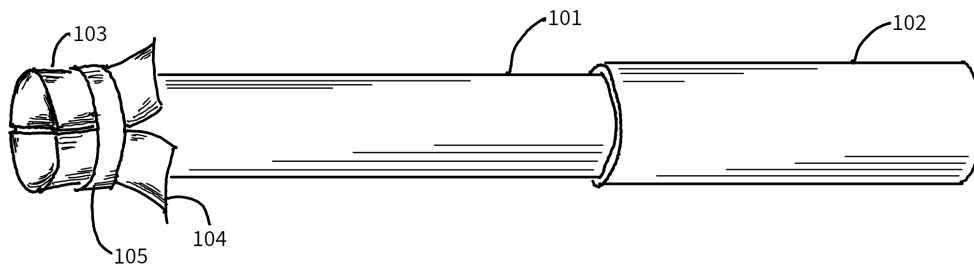


FIG. 1

FIG. 1 depicts one embodiment of the musical instrument. It includes a body tube **101**, and a slide tube **102** that fits around the body tube **101** to lengthen and shorten the musical instrument, thereby changing the pitch of the tone produced by the instrument. Other mechanisms for adjusting the length of the tube and thereby altering the pitch of the instrument are well-known to those of skill in the art and may be used in alternative embodiments.

The instrument further includes two flaps of flexible material **103** and **104**. Each flap covers part of the end of the tube, and the flaps are adjacent to each other so that substantially all of end of the tube is covered as shown in **FIG. 1**. In some embodiments, the flaps may overlap, or they may be nearly touching each other. The flaps are made of a flexible material, such as HDPE plastic often used for grocery bags, and are attached to the end of the tube with tape **105**. All kinds of other materials could be used for the flaps, such as balloon rubber, paper, fabric, leather, and so on.

What is claimed is:

1. A musical instrument apparatus, comprising:
 - [1a] a body tube having a mouthpiece end;
 - [1b] a first flexible flap partially covering the mouthpiece end;
 - [1c] a second flexible flap partially covering the mouthpiece end and next to the first flexible flap; and
 - [1d] a mechanism for adjusting the length of the body tube.
2. The musical instrument apparatus of Claim 1, wherein the first flexible flap and second flexible flap are made of HDPE plastic.

The Market

By June 2018, Susannah has set up manufacturing for her buzzy tubes and begins selling them. They are tremendously popular, especially among elementary school children.

Oliver Rivas, a third-grade teacher in Annapolis, Maryland, learns about buzzy tubes and thinks it would be a great arts-and-crafts project for students to make them. He writes and posts a blog entry on his website with instructions for making the whole thing, slide tube, flaps and all. Almost immediately, he starts getting complaints from parents and teachers that their homemade buzzy tubes don't work. As Oliver learns, very few materials actually work for the flaps: Some make no sound at all, some stick together, some just break apart. Not even all HDPE or grocery bag plastic works. It turns out that Susannah was just lucky in finding a flap material that worked especially well.

After weeks of experimenting, Oliver finds that if he freezes a certain brand of bicycle inner tube rubber for 12 hours, the material chemically stiffens and works perfectly. To save others the trouble of doing the same, Oliver sells pre-cut pieces of frozen rubber, ready to use in making buzzy tubes.

Essay Questions (2 hours)

1. (60 minutes, 2000 words maximum) Identify and discuss any patentability issues with **Claim 1 only**. If there is a novelty issue, choose and analyze the single prior art reference you identify as most likely to anticipate. If there is an obviousness issue, analyze a single combination of prior art references you identify as most likely to render the claim obvious, and only use combinations of references (i.e., do not consider obviousness in view of a single reference).
2. (20 minutes, 800 words maximum) Assuming that the patent is valid, discuss whether and how Oliver infringes Susannah's patent.

3. (20 minutes, 800 words maximum) Susannah seeks lost profits for infringement, solely on the theory that she now sells fewer buzzy tubes because of Oliver's infringing acts. (She does not allege price erosion or lost sales of other products.) You are Oliver's lawyer. What information would you want to obtain in order to advise Oliver on the likely amount of lost profits that would be awarded?

4. (20 minutes, 800 words maximum) In an effort to avoid infringement, Oliver changes the design of his musical instrument. Rather than having two flaps over the mouthpiece end, his new instrument uses a single flexible flap piece with a slit cut in the middle. Does an instrument made according to Oliver's new instructions infringe Susannah's patent?