

# The *Tapper* Videogame Patent as a Series of Close Readings

**Mark J. Nelson**

The MetaMakers Institute  
Falmouth University  
Penryn, Cornwall, UK  
mjn@anadrome.org

## ABSTRACT

The popular 1983 arcade game *Tapper* seems simple at first. The player controls a bartender, and serves customers beer, racing against the clock to serve them before they run out of patience. What then to make of a 10,000-word patent application filed in 1984, claiming protection for the game as an invention? Arguing over the patentability of videogame designs isn't the purpose of this paper; rather, the *Tapper* patent document itself turns out to constitute a remarkable series of close readings of the game from multiple angles, while illustrating methods for game analysis that are of interest beyond patent law. This starts from its abstract yet evocative title—"Video game in which a host image repels ravenous images by serving filled vessels"—and continues from there, along the way touching on a number of subjects also considered by more recent authors.

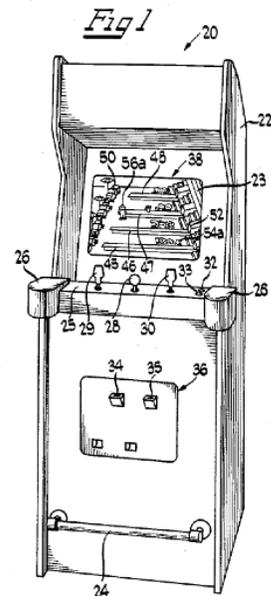
## Keywords

patent, close reading, formalism, game diagram

## INTRODUCTION

*Tapper* is a 1983 arcade game in which the player undertakes a stylized form of bartending. The player controls a bartender who fills up mugs of beer, and serves them to customers by sliding them down one of several bars. While a customer's thirst remains unquenched, they slowly creep forward along the bar towards the bartender. The player loses if any customer reaches the bartender's end of the bar. Serving a customer pushes them away, back towards the other end, where the doors lie. A level is completed by clearing it of customers, which is done by serving them in such a timely fashion that they are pushed right out of the door.

While the game itself is fairly well-known, it appears to be less well-known that it was patented at the time. The fact that the name *Tapper* doesn't actually appear anywhere in the patent may be a contributing factor; I only ran across it by accident, and recognized the game it was about from the figures. More to the point of the current paper, the patent application itself is a remarkable document (Meyer et al. 1984).



*Tapper* was published by arcade-game publisher Bally Midway, but developed by Marvin Glass and Associates, a prominent American toy-design firm that had scored a number of successes in electronic and part-electronic toys and games through the 1960s and 1970s, including *Lite-Brite*, *Operation*, and *Simon* (Walsh 2005). Perhaps because patenting designs was routine in the toy world, they filed the patent application for *Tapper* discussed here.

The constrained format and purpose of a patent application, applied here to a game design, leads to a number of interesting, distinct readings of the game. Or so this paper will argue, reading the patent application as a series of close readings of *Tapper*.<sup>1</sup> Each reading in the patent emphasizes a different facet of the game, its play, and/or its construction, as the application seeks to document both the design and operation of this “invention”, and to distinguish it from prior inventions. Some of these readings are straightforward and literal, but others are quite fresh, related at times to recent topics of discussion in game studies and software studies.

## **CLOSE READINGS OF *TAPPER***

In analyzing the series of close readings of *Tapper* that I’ll read the patent application as comprising, I’ll proceed roughly in the order that they appear in the document, starting of course with the title.

### **Title: Abstract but evocative**

The title of the patent application is really something:

**Video game in which a host image repels ravenous images  
by serving filled vessels**

This is a succinct, surprisingly evocative summary of the game’s narrative, so to speak: *Tapper* is a game about a host image repelling ravenous images by serving filled vessels.

The slippage between technical and in-game levels of description is intriguing. The bartender and customer are described in an abstract, semi-technical sense as just *images*, i.e. sprites drawn on a monitor. But rather than continue with that dry language, one of these images is described with the vivid adjective *ravenous*. Then things turn abstract again: the ravenous images aren’t sated by *beer* but by *filled vessels*.

Why this odd language? Part of it may be simply an attempt to sound more technical, perhaps even deliberately abstruse, since patents are supposed to describe technological inventions. But more than that, patents are also supposed to describe a *type* of technical invention, boiled down to the essentials that make it a novel device rather than a specific one-off artifact. This generalization is also what makes patents useful to the patent holder, since the holder would like to claim that similar things someone else might build are within the patent’s scope.

Therefore patents have a generalizing tendency. Not always in the title, but in some cases, as here, the title is where the attempt to carve out the general class of invention starts. In the case of describing a game, this generalizing description has an interesting effect. Rather than

describing *Tapper* specifically, the patent's title abstracts away parts of the game's specifics and describes what I've called a reskinnable *game space* (Nelson and Mateas 2008), a class of games that can be instantiated with a number of different realizations by substituting different sprites, as long as they retain the appropriate relationships to each other. The specific game *Tapper*, with bartenders serving customers beer, is then only one specific realization of this more abstract game.<sup>2</sup>

In this case, the connection to reskinnable game spaces is quite direct, because the patent's title literally forms a template defining a game space. This can be highlighted by inserting a few brackets setting off the variable components:

Video game in which a [host image] repels [ravenous images]  
by serving [filled vessels]

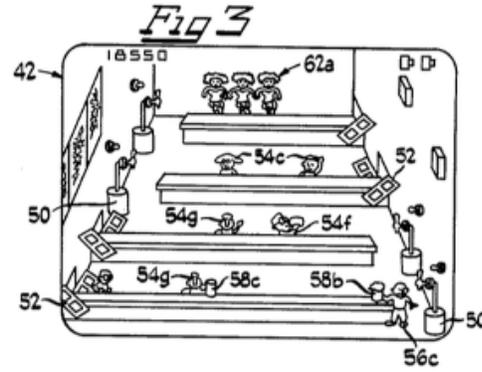
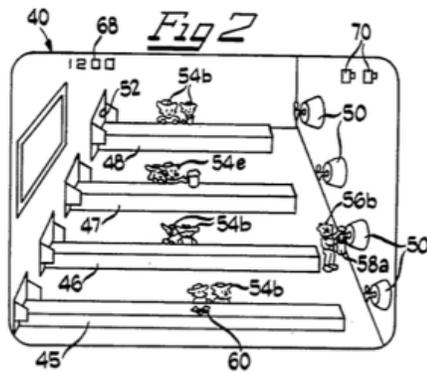
One possible skin is to have the host image *bartender* repel ravenous images *bar customers* by serving them a specific kind of filled vessel, *beer mug*. But there may be other skins, so long as they respect the constraints implied by the adjectives and verbs. The images being repelled must be something that could be perceived as *ravenous*. There must be some kind of *filled vessel* that a suitable *host* image can use to repel the ravenous images. And this vessel must plausibly satisfy the ravenous images' desire for the contents with which it is filled.

Bally Midway themselves issued a reskinned version a year after the initial release, although it was a rather superficial, euphemistic modification driven by concerns over underage drinking. The original *Tapper* not only featured beer being served in a bar, but had in fact been entirely designed around serving Budweiser beer in a bar, specifically.

While *Tapper*'s brand/game tying is reminiscent of advergaming, where a company commissions a game as an advertising tool, in the case of *Tapper* the relationship was reversed. As Vedrashko (2006, pp. 42–43) uncovered through an interview with Midway veteran George Gomez, Bally Midway approached Budweiser with a proposal for a branded game that would be distributed through Budweiser's own distributors. The goal here wasn't to use a game to advertise Budweiser, but to use Budweiser to advertise a game: the hope was that going through this channel instead of normal arcade sales channels would allow for a shortcut to a massive audience, due to the access to bars that would be gained by selling the cabinet through the large network of Budweiser distributors.<sup>3</sup>

In the end, though, the game proved popular enough that it began to appear in regular arcades rather than only in bars, which led to concerns over underage arcadegoers playing a beer-themed game. Bally Midway responded by simply replacing the Budweiser beer logos with a generic root-beer logo, releasing *Root Beer Tapper* in 1984.

More significant re-skins would make it a very different game; a lot of the feel of the game relates to the bartending setting. Just from the patent's title, a procedural generator of such "U.S. Patent 4,643,421 games" suggests itself.



### Abstract: A gameplay description

The patent does not settle only an abstract-yet-evocative take on the game. The next read is a more matter-of-fact, descriptive summary of gameplay. This take is along the lines of the one I gave at the beginning of this paper, but longer and more detailed. And, now it's a description of the concrete gameplay of *Tapper* specifically, rather than of a space of filled-vessel games. This gameplay description serves as the patent's abstract. That fact is itself mildly interesting, since the abstract is nothing but a gloss of gameplay, not attempting to describe it as a machine, device, or invention (as some of the later parts of the patent do). The patent abstract could be almost equally at home as a blurb for *Tapper* in a videogame catalog.

A video game in which the player must fill mugs from a keg and slide the filled mugs down a bar to advancing thirsty patrons to repel the patron out the bar. The player controls movement of a host image from one horizontal bar to another and laterally along a bar plus the filling of mugs. If any of the thirsty patrons reach the keg end of the bar the player loses a turn. Repelled patrons are delayed while drinking and then return the empty mugs. Unless the empty mugs are caught by the host the player loses a turn. A turn is also lost if the player serves a full mug and there is no thirsty patron awaiting it. From time to time a tip will appear on one of the bars which the host image may pick up causing dancers to appear for an interlude during which some of the patrons turn to watch. While watching the patrons neither advance nor are thirsty. Bonus entertainment racks are periodically introduced during which six cans are displayed. Five of the cans are shaken and the cans then exchange positions after which the player must select the one unshaken can to obtain bonus points.

Besides being mainly a gameplay description rather than attempt to position *Tapper* as an invention, the other thing that stands out about the abstract is that it's a bit more colorful than one might expect from a patent document. On the one hand there is a rather pedantic insistence on describing the player as controlling *movement of a host image*, an attention to the player–avatar distinction (or perhaps more precisely, what Vella (2014) calls the player–figure distinction) that some game-studies scholars might appreciate. But on the other hand,

much of the abstract is written as an in-universe explanation of what these *advancing thirsty patrons* are doing. In any case, not much here sounds like a technical invention, though it certainly does sound like a videogame.

### **Field of invention: Is *Tapper* a shooter?**

After the abstract, the main body of a patent begins by establishing the field of the invention. What kind of invention is *Tapper*? The patent answers:

This invention relates generally to games and, more particularly to electronic video games of the type where a player controllable image moves and directs projectiles at advancing opposition.

So now we have another read of *Tapper*: it's a shooter game. The player controllable image (bartender) moves and directs projectiles (mugs) at advancing opposition (bar patrons). While not necessarily wrong, this is a bit surprising, since it isn't normally thought of as a shooter.

More relevant to the patent examiner, one might ask: how can it then be an invention at all? Didn't we already have a lot of shooters, even in 1984? The document does mention *Space Invaders* as prior art:

In the popular prior art Bally Midway SPACE INVADERS video game generally horizontal lines or waves of alien images move from side to side and advance down, line by line, toward a defending image which can shift from side to side and fire up at the alien images to destroy them. The SPACE INVADERS aliens fire their own projectiles at the defender and there is a spaceship moving across the screen above the lines of aliens which the player tries to shoot in between the aliens to score bonus points.

Given this juxtaposition, we might now wonder, even if we wouldn't have previously: is *Tapper* just a reskin of *Space Invaders*? Like an awkward related-work section, the patent attempts to distinguish:

However, there remains a need for games that challenge players to control movement of a defending or host image and repel advancing opposition by means of player controllable projectiles in a nonviolent entertaining manner that is neither fatal to the player controllable image or the opposition.

The answer, then, is that *Tapper* innovates compared to previous shooters such as *Space Invaders* because it is a nonviolent shooter, in which the projectiles are not fatal. I must confess that this specific formulation seems like a bit of a stretch for explaining why it's a patentable invention, but then I am not a patent lawyer.

It is an interesting read of *Tapper*, though. In terms of genre, the game is more commonly grouped with games such as *BurgerTime*, *Pressure Cooker*, and *Diner Dash* into something we might call order-fulfillment games. This highlights the customer-service angle implied by the bar setting, placing *Tapper* alongside other games whose basic gameplay revolves around the player fulfilling, under time pressure, the requirements of customers who demand to be served. The patent's title also has a similar flavor, referencing the host's need to satiate ravenous images.<sup>4</sup>

One way to explain this genre muddle is via a distinction between abstract and concrete mechanics I introduced in a different context (Nelson and Mateas 2007). Calling the genre order-fulfillment categorizes the game by its abstract mechanics, which are those that describe the game's rules and goals in a high-level sense, without reference to specific audio-visual elements. From that perspective, the game consists of the player fulfilling requests under time pressure. But calling it a nonviolent shooter instead categorizes the game by its concrete mechanics, the visible on-screen elements and their interactions: the player is slinging images representing beer mugs as projectiles, and they have their effect by colliding with other images, as in shooters. Taken together, this "field of the invention" section helps suggest an alternate take on the game's genre: it's an abstract order-fulfillment game mapped onto shooter-like concrete mechanics.

### **Iteratively elaborated gameplay description**

The rest of the patent has an odd flavor of repetition with ever-increasing detail. The gameplay description from the abstract is taken as a sort of template that is iteratively expanded to form subsequent sections. The first instance of repetition comes in the patent Summary, which restates the Abstract (many sentences are verbatim the same) but at approximately twice the length. Next, the Summary is further elaborated in the Detailed Description section, ballooning by another eight times or so, and pulling in a few technical features of the arcade machine in that version. And finally, the game's design is recapped in highly stylized form in the formal Claims section of the patent.

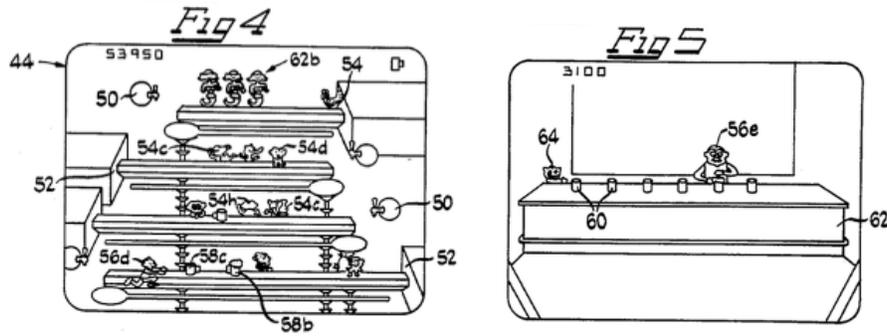
This style of repeatedly elaborated gameplay description, using the same explanation but bringing in ever more detail with each retelling, is a method of game reading that may have, I propose, some future use as either a serious method, or as an artistic device.

### **Example: The drink-and-return sequence**

Let's follow one particular gameplay sequence as it goes through this expansion of detail: a patron receives a beer, drinks it, and then returns the empty mug. To start, there's a concise description in the abstract:

Repelled patrons are delayed while drinking and then return the empty mugs.  
Unless the empty mugs are caught by the host the player loses a turn.

That's clear enough, but doesn't specify all the details. How are the empty mugs returned? What does the player have to do to catch them? What happens if a patron is repelled all the way to the end of the bar?



The summary section spells it out:

A patron is repelled back an incremental distance toward the door end of the bar upon being served a full mug. When the patron is repelled to the door end boundary, the patron is ousted but reenters the bar after a predetermined delay. If not ousted, the patron's advance is delayed while the patron consumes the contents of the mug. When the mug is empty, the patron returns the empty mug back down the bar toward the keg. The player controlled host image must be moved to intercept and catch the empty mug before it falls off the keg end of the bar and breaks. Should an empty mug fall and break the player loses a turn.

This is getting more precise, but is still not enough to unambiguously implement the game. What's the spatial layout of the bars, customers, and patrons? What precisely does it mean for a host image to "intercept and catch the empty mug"? Does the player have to press a button? Just be in the right place? Can they catch an empty mug at the same time they're serving another one, or only do one at a time?

The detailed description section, with reference to Figures 2, 3, and 4, supplies the answers to these questions:

Upon an advancing patron such as the cowboy 54e in FIG. 2 receiving a filled mug 58b, the receiving patron will be moved or repelled back toward the door end of the bar a predetermined incremental distance. If the patron is moved to the boundary at the door image 52, the patron goes off screen for a predetermined time interval and then reenters the same bar at the door 52. However, if the repelled thirsty patron remains on screen, the patron will then be shown in a drinking pose 54f as in FIG. 3. When the patron, after a predetermined delay, finishes drinking the beverage, the empty mug 58c, is slid back toward the supply or keg end of the bar.

If an empty mug 58c reaches the supply end of the bar and the host is present in any of the wiping, filling or serving poses 56a, b and c, respectively, the empty mug will be caught. The player also has the option of moving the host laterally

along the bar to intercept the empty mug as in FIG. 4 where the host image is displayed in a running action post 56d. When the player successfully positions the host image to catch an empty mug 58c the player earns One Hundred points. However, if any empty mug 58c, in the absence of an interception, should reach the end of the bar and the host image is not there to catch it, the empty mug will be depicted as falling off the bar and breaking (not shown) and the player will lose a life or turn.

Those two paragraphs give only a small sample of the effect of reading the full 5000-word detailed-description section. It describes every aspect of gameplay at this level of detail, and has the flavor of prose-structured pseudocode interleaved with an extremely pedantic walk-through. The method of reading a videogame by interleaving close reads of its process with close reads of its experience is vaguely reminiscent of work in software studies (Wardrip-Fruin 2009), although here carried out in excruciatingly low-level detail.

A version of this detailed description appears one more time in the Claims section of the patent, which is the primary legally binding portion of a patent. The only difference is that it was passed first through a filter to make it nearly unreadable:

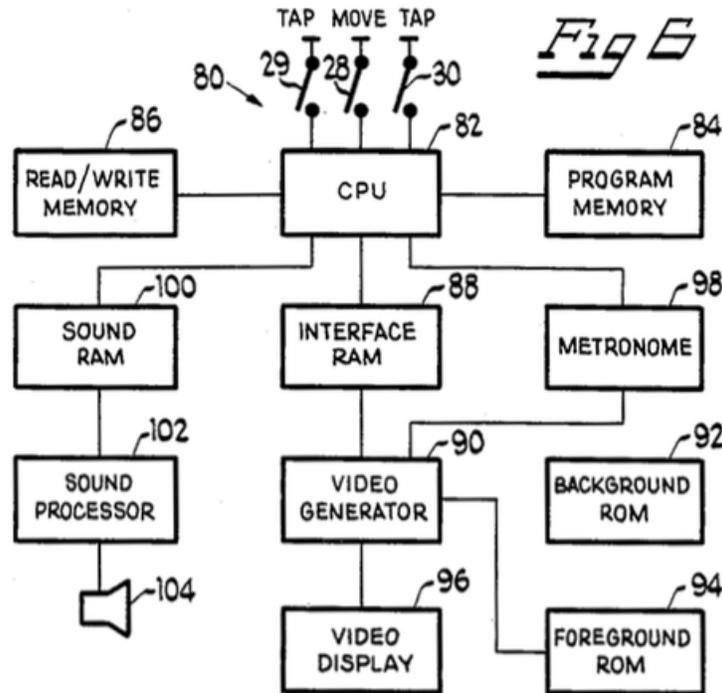
What is claimed as new and desired to be secured by Letters Patent is:

[...]

3. A game involving the repelling of ravenous images comprising: means for displaying a plurality of various ravenous images; means for displaying a host image; [...] means detecting subsequent operation of the player operable means after the producing of an image of a filled vessel and propelling the filled vessel image toward the boundary image remote from the supply image; means discerning coincidence between the propelled filled vessel and an advancing ravenous image; means repelling the advancing ravenous image back toward the boundary image upon the coincidence with the filled vessel being discerned; the ravenous image being repelled an increment of the distance between the boundary image and the supply image; and means displaying the ravenous image emptying the filled vessel and then returning an empty vessel toward the supply image if the ravenous image has not been repelled beyond the boundary image. [...] 4. The game of claim 3 including means terminating a player turn if the host image is not moved to intercept the returned empty vessel. 5. The game of claim 3 including means immobilizing the advance of the ravenous image during display of the ravenous image emptying the vessel.

### **Schematic representations of the game**

Turning back to to the included figures gives us a few more looks at the game. U.S. patent law requires accompanying drawings, in cases “where necessary for the understanding of the subject matter sought to be patented” and “when the nature of such subject matter admits of illustration by a drawing” (U.S. Code 35 § 113).



There are at least three very common types of patent drawings.<sup>5</sup> The first is simply a drawing of the invention being patented, usually a machine or other apparatus. These are typically line drawings, with parts labeled for reference in the text, executed in a roughly realistic style and to approximate scale.

The figures reproduced thus far (Figs. 1–5) are of this type. Here, the apparatus is mainly a non-physical one—a videogame—and the labeled “parts” of the apparatus are images that move on screen in order to effect its operation. Figure 5, for example, has parts such as *host image* (labeled 56e) and *bar image* (labeled 62). Figure 1 is a more conventional apparatus drawing showing the physical arcade cabinet and its parts.

### **Tapper is a machine for tapping**

A less literal type of illustration, also common in patents, is the block diagram. In a block diagram, labeled boxes show the main components of an apparatus, and links between these components show functional relationships. This is intended to show the conceptual makeup of a machine and how its parts fit together functionally, rather than what it physically looks like and how its parts fit together physically.

The *Tapper* patent doesn’t include a block diagram of the gameplay’s operation, i.e. a block diagram that would be a counterpart to the drawings of Figures 2–5. It does however include a block-diagram counterpart to the physical machine illustrated in Figure 1. The level of abstract reductionism in this representation, shown in Figure 6, is excellent.

This figure provides another read of *Tapper*. It is a machine made up of 11 major internal components, including a CPU, several kinds of RAM, two ROMs, etc. This machine has three levers by which its operation can be manipulated: TAP MOVE TAP. The

player sits in the driver's seat perched precariously atop this contraption and operates those levers, issuing TAP MOVE TAP instructions, which are transmitted to components such as METRONOME and SOUND RAM.

## Diagramming game logic

Finally, a third type of diagram commonly found in patents is a flowchart showing the logic of a machine's operation. While the previous two types of diagrams illustrate a machine statically, a flow chart shows the dynamic operation of a machine as it moves through different states and modes of operation over time.

Since this patent has so far wavered between describing an arcade machine (i.e., computer), and describing the videogame in terms of its gameplay, the logic of the machine here could be either a computer's logic or a game's logic. The only flowcharts included, however, are for the game's logic.

That's an interesting problem to tackle, since producing a satisfying visual representation of a game's logic has proven to be a difficult task, despite a number of attempts in the past decade. Proposals include the visual game grammars of Koster (2005) and Bura (2006), and the game feedback diagrams of Dormans (2009), but it's probably fair to say that no single approach has really caught on so far.

For *Tapper*, however, the game logic is simple enough that the patent writer was able to diagram it using only basic flowchart symbols, as found in many other patents. The game's logic is visualized as a graph of nodes with directed edges. Each node is either an action node or a conditional node. Action nodes describe something taking place in the game and have one outgoing edge, which leads to the action or condition that takes place next. Conditional nodes test a condition and have multiple outgoing edges; one of these is taken, depending on the outcome of the test. Figure 7, diagramming the overall game logic of *Tapper*, is the only time I've seen someone draw out the entirety of a game's logic as a flowchart, even for a simple game.

## CONCLUSION

It's tempting, after seeing *Tapper* described through a substantial amount of patent-formatted text and diagramming, to consider the document to be something of a parody or *reductio ad absurdum*. There are many questionable patents, of course, but this patent isn't strange in only the usual way, that it proposes an invention where one might be skeptical that patent protection is really in order. It reads parodically because it seems to be describing the wrong thing entirely: It takes the formal structure of a patent, which is most at home when describing machines and other devices, and uses it to write a strange kind of gameplay summary and walkthrough. Summary of the invention, detailed description of its preferred embodiment, diagram and block diagram of the apparatus, flow chart of its operation, list of specific claims, etc., all the normal parts of a patent are there—but each of these is explaining, yet again but in a different way each time, the design and gameplay of an arcade game in which you serve beer!

But this exercise in describing gameplay through the lens of patent structure ends up being very interesting. It's inadvertently carrying out a detailed formalist analysis of the

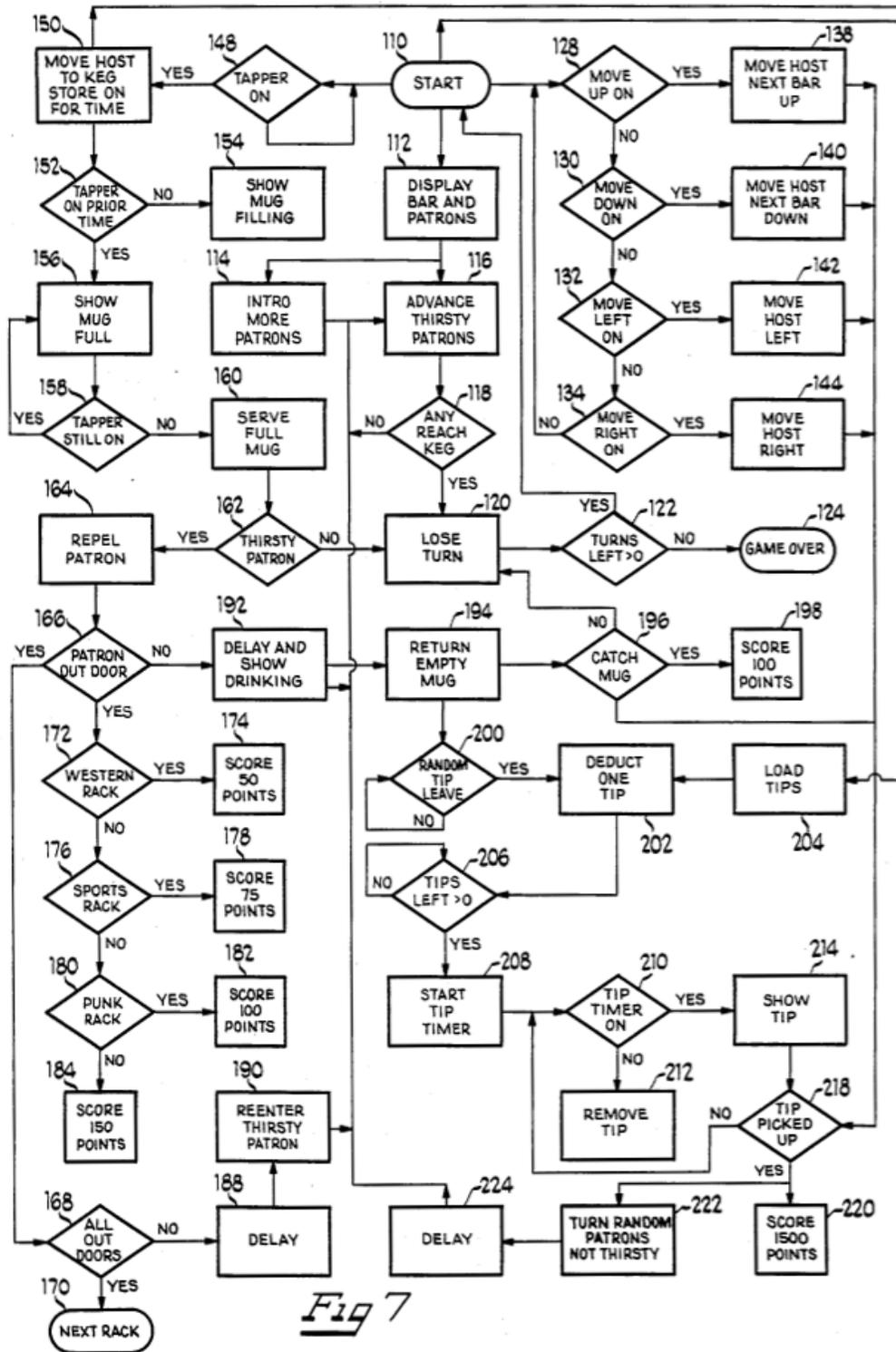


Fig 7

videogame, which sheds light on it from several angles. Especially interesting is that, while very detailed, it also has a strong push towards abstraction and generalization intertwined with the lengthy concrete game-logic explanations and play walkthroughs. And even at its most detailed, the document's format requires it to remain at the level of prose description and diagrams, not simply giving the game's source code or circuitboards, so it carries through a narrative rather than devolving into pure engineering description.

Besides the imagery of *ravenous images* being repelled, parts of the document even have a certain kind of literary feel. One reads, in deadpan voice, the same gameplay description that has appeared several times appearing once more, but in different form and with different registers of description. And the claims section is a bit glitchy, as different assertions and text from previous parts are jumbled together in a sometimes-accreting, sometimes-resetting pattern.

The almost obsessive repetitive re-readings of the game can be juxtaposed with another, otherwise much different, text written around the same time, the autoethnographic descriptions of learning to master *Breakout* given by Sudnow (1983). While the *Tapper* patent document is not *Pilgrim in the Microworld* in its importance for game studies, it represents, I argue, a different and still important approach to repeated close reading, and a comparison of the quite different readings given by these two approaches would be instructive.

The *Tapper* patent document in particular highlights four methods for close reading, which are of interest beyond patent law: generalization of specific games to spaces of games, closely intertwined reading of game construction and player experience, iterative rereading at ever-expanding levels of detail and specificity, and visual diagramming of game design.

## ENDNOTES

1. For an overview of approaches to close reading of games, see Bizzocchi and Tanenbaum (2011). This paper sticks rather closely to reading the *Tapper* patent's readings of *Tapper*, and pulling out a few general methods for reading games that are thereby suggested; it does not delve into a comparative analysis of close reading techniques.

2. See Treanor et al. (2010)'s dissection of reskinned *Kaboom!* variants for an extended example of such constrained re-skins applied to a different game.

3. That the proposal came from Bally Midway rather than Budweiser helps explain the oddness Bogost (2007, pp. 218–220) notes in *Tapper* as an advergaming: advertising beer by portraying beer drinkers as a relentless zombie horde that the player must fend off is a curious approach.

4. Treanor and Mateas (2011)'s very different close reading of *BurgerTime*, focusing on a proceduralist read of its meaning, is worth a mention here.

5. The rather interesting genre of patent drawings doesn't appear to be as well studied as one might expect, but Rankin (2011) sketches a legal-cultural history of their use in U.S. patents.

## BIBLIOGRAPHY

Bizzocchi, Jim, and Joshua Tanenbaum. 2011. "Well read: Applying close reading techniques to gameplay experiences." In *Well Read 3.0: Video Games, Value, and Meaning*, edited by Drew Davidson, 289–315. ETC Press.

- Bogost, Ian. 2007. *Persuasive Games: The Expressive Power of Videogames*. MIT Press.
- Bura, Stéphane. 2006. “A game grammar.” <http://users.skynet.be/bura/diagrams/>.
- Dormans, Joris. 2009. “Machinations: Elemental feedback structures for game design.” In *Proceedings of the GAMEON-NA Conference*, 33–40.
- Koster, Raph. 2005. “A grammar of gameplay.” In *2005 Game Developers Conference*. <http://theoryoffun.com/grammar/gdc2005.htm>.
- Meyer, Steven M., R. Scott Morrison, and Howard J. Morrison. 1984. Video game in which a host image repels ravenous images by serving filled vessels. U.S. patent 4,643,421, filed August 31, 1984.
- Nelson, Mark J., and Michael Mateas. 2007. “Towards automated game design.” In *AI\*IA 2007: Artificial Intelligence and Human-Oriented Computing*, 626–637. Lecture Notes in Computer Science 4733. Springer.
- Nelson, Mark J., and Michael Mateas. 2008. “An interactive game-design assistant.” In *Proceedings of the 13th International Conference on Intelligent User Interfaces*, 90–98.
- Rankin, William J. 2011. “The ‘person skilled in the art’ is really quite conventional: U.S. patent drawings and the persona of the inventor, 1870–2005.” In *Making and Unmaking Intellectual Property: Creative Production in Legal and Cultural Perspective*, edited by Mario Biagioli, Peter Jaszi, and Martha Woodmansee, 55–75. University of Chicago Press.
- Sudnow, David. 1983. *Pilgrim in the Microworld*. Warner Books.
- Treanor, Mike, and Michael Mateas. 2011. “BurgerTime: A proceduralist investigation.” In *Proceedings of the 2011 DiGRA Conference*.
- Treanor, Mike, Michael Mateas, and Noah Wardrip-Fruin. 2010. “Kaboom! is a many-splendored thing: An interpretation and design methodology for message-driven games using graphical logics.” In *Proceedings of the 5th International Conference on the Foundations of Digital Games*, 224–231.
- Vedrashko, Ilya. 2006. “Advertising in Computer Games.” Master’s thesis, Comparative Media Studies, Massachusetts Institute of Technology. [http://www.gamesbrandsplay.com/files/vedrashko\\_advertising\\_in\\_games.pdf](http://www.gamesbrandsplay.com/files/vedrashko_advertising_in_games.pdf).
- Vella, Daniel. 2014. “Player and figure: An analysis of a scene in Kentucky Route Zero.” In *Proceedings of the 2014 Nordic DiGRA Conference*.
- Walsh, Tim. 2005. *Timeless Toys: Classic Toys and the Playmakers Who Created Them*. Andrews McMeel Publishing.
- Wardrip-Fruin, Noah. 2009. *Expressive Processing: Digital Fictions, Computer Games, and Software Studies*. MIT Press.