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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

MATHEW HUFNUS, individually and on behalf of all others similarly situated,

Plaintiff,

v.

DONOTPAY, INC., a Delaware Corporation,

Defendant.

Case No. 3:20-cv-8701-VC

CLASS ACTION

Judge Vince Chhabria

AMICUS BRIEF OF PROFESSIONAL ASSOCIATION FOR CUSTOMER ENGAGEMENT ("PACE")

Hearing Date: June 10, 2021, 2:00 PM

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STATEMENT OF ISSUES

Whether Plaintiff has plausibly alleged that the text message he received asking him to complete his registration for DoNotPay, a service associated with a website and a mobile phone app that utilizes artificial intelligence to help consumers solve various problems, was sent using an "automatic telephone dialing system" as defined by 47 U.S.C. § 227(a)(1), which is a necessary element of Plaintiff's Telephone Consumer Protection Act claim. PACE[1] is submitting this *amicus* brief to help the Court better interpret the Supreme Court's *Facebook v. Duguid* opinion with respect to the meaning of the words "capacity," "number generator," and the significance footnote 7 to the foregoing issue.

SUMMARY OF ARGUMENT

The Telephone Consumer Protection Act ("TCPA") defines an "automatic telephone dialing system" ("ATDS") as equipment with the capacity "to store or produce telephone numbers to be called, using a random or sequential number generator" and to dial those numbers. The essence of the issue before the Supreme Court in *Facebook v. Duguid,* 141 S. Ct. 1163, 209 L. Ed. 272 (2021), was one of statutory interpretation, which was largely resolved by the application of grammatical canons of construction. The fundamental question in *Facebook* was whether the random or sequential number generation requirement applied to both of the words

[1] The Professional Association for Customer Engagement ("PACE") is a non-profit industry trade association dedicated to aiding companies in engaging customers in a compliant manner, using a variety of channels, including telephonically.

"store" and "produce," or instead only applied to the word "produce." The Supreme Court answered this question unequivocally in the first paragraph of its opinion. "We conclude that the clause modifies both, specifying how the equipment must either 'store' or 'produce' telephone numbers." *Facebook v. Duguid*, 141 S. Ct. at 1167.

However, *Facebook* did not explicitly address other concepts related to the statutory definition of an automatic telephone dialing system ("ATDS" or autodialer), which are relevant in cases examining whether equipment qualifies as an autodialer in a post-*Facebook* environment. In light of the *Facebook* opinion interpreting the statutory definition of an ATDS, the Professional Association for Customer Engagement ("PACE") and Noble Systems Corporation is submitting this *amicus* brief ("present PACE *amicus* brief") to help the Court better interpret three issues pertinent to the autodialer definition.

First, the interpretation of "capacity" is properly interpreted as a "present capacity." The *Facebook* opinion explicitly required that number generator technology must be used when making calls. Second, the interpretation of "number generator" is properly interpreted as a "*telephone*" number generator, as the *Facebook* opinion implicitly required that the numbers generated are telephone numbers that are dialed. Finally, the purpose of footnote 7 of the *Facebook* opinion was to provide evidence that number generators could store numbers, contrary to Duguid's technical understanding.

ARGUMENT

I. Introduction

Facebook answered a very specific question related to the interpretation of the Telephone Consumer Protection Act's ("TCPA") statutory definition of an autodialer. The Court adopted a

narrow interpretation that held the words "using a random or sequential number generator" modifies both "store or produce."

The Supreme Court rejected the broad interpretation of *Marks v. Crunch San Diego, LLC*, 904 F.3d 1041 (9th Cir. 2019) that alleged the random or sequential number generator only modified "produce." The Court would not accept the conclusion that all equipment that stored and dialed a telephone number was an autodialer, as this would cast too wide of a net and encompass conventional smartphones. *Facebook v. Duguid*, 141 S. Ct. at 1171-72. *Facebook* made explicitly clear that the equipment had to actually use either a random or sequential number generator to be an autodialer. *Id.* at 1167.

Attempts to incorrectly broaden the scope of the autodialer definition focus on misinterpreting three instances of the Court's opinion and ignore the context of the Court's reasoning. The first instance involves properly interpreting the word "capacity" used in the Court's holding. As between choosing between two competing interpretations, namely a "present capacity" or a "potential capacity," the "present capacity" interpretation is correct. The second instance involves properly interpreting the phrase "random or sequential number generator." This should be interpreted as generating *telephone* numbers that are dialed. The third instance involves properly interpreting two sentences in footnote 7 of the *Facebook* opinion, followed by a citation to the PACE's *Facebook amicus* brief. In that case, the Court cited PACE's *Facebook amicus* brief as evidence contradicting Duguid's assertion that number generators technically could not store numbers. Evidence shows they could, and thus Duguid's premise for broadly interpreting the autodialer definition was based on an incorrect technical understanding.

As a result of adopting these interpretations, the statutory definition of an autodialer does not encompass smartphones nor common household telephones. However, adopting an incorrect broad interpretation of these terms results in smartphones and household telephones falling with the scope of an autodialer. That is an unacceptable outcome that the Supreme Court expressly intended to avoid in *Facebook.*

II. Interpreting the Statute

Section 227(a)(1) of the TCPA defines an autodialer as:

"equipment which has the capacity—

"(A) to store or produce telephone numbers to be called, using a random or sequential number generator; and

"(B) to dial such numbers."

A. The Word "Capacity" Must Mean a "Present Capacity" Used to Make Calls

The word "capacity" is included in the statutory definition of an autodialer and the Supreme Court included that word in its holding when referencing the statutory language: "We hold that a necessary feature of an autodialer under §227(a)(1)(A) is the capacity to use a random or sequential number generator to either store or produce phone numbers to be called." *Facebook v. Duguid*, 141 S. Ct. at 1173.

Issues surrounding the interpretation of "capacity" are well known to those veterans of TCPA litigation and to the courts. It was described in a Federal Communications Commission ("FCC") 2015 Declaratory Ruling as pertaining to a "potential" ability for equipment to be modified to incorporate the functionality. FCC 2015 Declaratory Ruling, 30 FCC Rcd. at 7961. This FCC perspective was characterized in *ACA Int'l v. FCC*, 885 F.3d 687, 693 as follows:

> With regard to whether equipment has the "capacity" to perform the enumerated functions, the Commission declined to define a device's "capacity" in a manner confined to its "present capacity." Instead, the agency construed a device's "capacity" to encompass its "potential functionalities" with modifications such as software changes.

ACA Int'l at 8, citing the FCC 2015 Declaratory Ruling, 30 FCC Rcd. at 7974 ¶ 16.

In short, the *ACA Int'l* decision considered both a broad and narrow interpretation of the word "capacity." The "potential" or "future" interpretation is the broad interpretation and the "present capacity" interpretation is the narrow interpretation.

If the "present capacity" interpretation is adopted, then another issue arises: does the equipment actually have to use the number generator technology in making a call, or is it sufficient if the technology is present in the equipment, but not actually used when originating a call? This is sometime referred to as a "latent capacity," where the technology is present, but not used.

While the Supreme Court did not expressly consider these competing interpretations of the word "capacity", the Court unambiguously indicated that the enumerated functions must be actually used for the equipment to an autodialer. As evidenced by the following excerpts from the *Facebook* opinion, the Court implicitly adopted a "present capacity" interpretation that required the technology be used for call origination.

- We conclude that the clause modifies both, specifying how the equipment must either "store" or "produce" telephone numbers. Because Facebook's notification system neither stores nor produces numbers "using a random or sequential number generator," it is not an autodialer. *Facebook*, 141 S. Ct. at 1169.
- Congress defined an autodialer in terms of what it must do ("store or produce telephone numbers to be called") and how it must do it ("using a random or sequential number generator"). *Id*.

- In sum, Congress' definition of an autodialer requires that in all cases, whether storing or producing numbers to be called, the equipment in question must use a random or sequential number generator. This definition excludes equipment like Facebook's login notification system, which does not use such technology. *Id*., at 1170.

- The statutory context confirms that the autodialer definition excludes equipment that does not "us[e] a random or sequential number generator." 47 U. S. C. §227(a)(1)(A). *Id*., at 1171.

It could not be stated any clearer by the Court that the random or sequential number generator technology must be actually used for equipment to be an autodialer. The Court explicitly stated if the technology was not used, then the equipment is not an autodialer. Thus, "capacity" must be interpreted as a "present capacity" and the technology must be used in order to be consistent with the Court's ruling. Attributing a "present capacity" interpretation to the Court's use of this word is consistent with adoption of the Court's narrow interpretation and the unambiguous statements in the opinion. To the extent that any prior lower court ruling states or implies that the technology does not have to be used, i.e., it is a "potential capacity" or a "latent capacity," that understanding is overruled by the *Facebook* opinion.

Further, the Supreme Court explicitly refused Duguid's broad interpretation because, in part, traveling down that path would lead to an unacceptably broad outcome.

> Expanding the definition of an autodialer to encompass any equipment that merely stores and dials telephone numbers would take a chainsaw to these nuanced problems when Congress meant to use a scalpel. Duguid's interpretation of an autodialer would capture virtually all modern cell phones, which have the capacity to "store . . . telephone numbers to be called" and "dial such numbers." §227(a)(1). The TCPA's liability provisions, then, could affect ordinary cell phone owners in the course of commonplace usage, such as speed dialing or sending automated text message responses.
> *Facebook,* 141 S. Ct. at 1171.

The unacceptable result of adopting a broad interpretation of "capacity" (i.e., a "future capacity") was also immediately apparent to the *ACA Int'l* court as encompassing all modern cell phones.

> Here the Commission adopted in its regulations an expansive interpretation of 'capacity' having the apparent effect of embracing any and all smartphones: the device routinely used by the vast majority of citizens to make calls and send messages (and for many people, the sole phone equipment they own). It is undisputed that essentially any smartphone, with the addition of software, can gain the statutorily enumerated features of an autodialer and thus function as an ATDS.
> *ACA Int'l*, 885 F.3d at 696.

The court in *ACA Int'l* held such an outcome was untenable.

> It is untenable to construe the term "capacity" in the statutory definition of an ATDS in a manner that brings within the definition's fold the most ubiquitous type of phone equipment known, used countless times each day for routine communications by the vast majority of people in the country. It cannot be the case that every uninvited communication from a smartphone infringes federal law, and that nearly every American is a TCPA-violator-in-waiting, if not a violator-in-fact.
> *Id*., at 17.

Thus, this Court (to the extent required) should interpret the word "capacity" in the Supreme Court's *Facebook* holding as a "present capacity." This interpretation is consistent with the Supreme Court's unambiguous language that the technology must be used for equipment to be an autodialer. Reading otherwise results in a broad outcome encompassing smartphones and that would be an untenable conclusion. Both the Supreme Court and the D.C. Court of Appeals have explicitly rejected that outcome.

B. A "Random or Sequential Number Generator" Is Properly Interpreted as Generating Telephone Numbers

Given that *Facebook* clearly mandates that equipment must use a random or sequential number generator to store or produce a number, the next issue involves the term "random or

sequential number generator." Does this encompass a function that merely generates any type of corresponding random or sequential number, or is it only limited to generating a telephone number?

Context Matters

The Court in *Facebook* was guided by the context of the TCPA law. *Facebook* stated that the TCPA was designed to address certain unique risks associated with indiscriminate dialing. "These prohibitions target a unique type of telemarketing equipment that risks dialing emergency lines randomly or tying up all the sequentially numbered lines at a single entity." *Facebook,* 141 S. Ct. at 1171. It followed that statement with the famous "chainsaws" and "scalpel" analogy: "Expanding the definition of an autodialer to encompass any equipment that merely stores and dials telephone numbers would take a chainsaw to these nuances problems when Congress meant to use a scalpel." *Id*.

The Court was interpreting risks associated with using a "random number generator" and "sequential number generator" as referring to dialing the *telephone numbers* being generated. "This case concerns 'automatic telephone dialing systems' (hereafter autodialers), which revolutionized telemarketing by allowing companies to dial random or sequential blocks of telephone numbers automatically." *Facebook,* 141 S. Ct. at 1167. The Court was focusing on the specific risks of *dialing* random or sequential telephone numbers. Obviously, the risk of randomly dialing an emergency line using a random number generator implies the random number generator is creating the telephone number that is being dialed. Similarly, the risk of tying up a sequence of telephone lines using a sequential number generator implies it is generating blocks of sequential telephone numbers that are being dialed.

There are other portions of the *Facebook* Ruling that support this conclusion. For example:

> Congress expressly found that the use of random or sequential number generator technology caused unique problems for business, emergency, and cellular lines. See *supra,* at 2. Unsurprisingly, then, the autodialer definition Congress employed includes only devices that use such technology, and the auto-dialer prohibitions target calls made to such lines.
> *Facebook,* 141 S. Ct. at 1172.

Thus, the plain implication is that the Court construed a "random or sequential number generator" as generating telephone numbers being dialed, not merely any number. For example, it is not possible to dial a four-digit telephone number, regardless of whether it was randomly generated or not, since it cannot be a telephone number. Dialing a telephone number requires that it must be a seven or ten-digit number that adheres to the North American Numbering Plan structure.

C. The Scope and Purpose of Footnote 7

Footnote 7 was included to address Duguid's allegation that the word "store" in the TCPA definition would be superfluous if the Court adopted Facebook's reasoning. Duguid had argued that because number generators technically can only produce numbers, the word "store" was superfluous. So, based on this technical reasoning, Duguid proposed a broad interpretation to ostensibly avoid that function (store) becoming superfluous. Footnote 7 addressed this argument stating: "Duguid argues that such a device would necessarily 'produce' numbers using the same generator technology, meaning 'store or' in §227(a)(1)(A) is superfluous. 'It is no superfluity,' however, for Congress to include both functions in the autodialer definition so as to clarify the domain of prohibited devices." *Facebook,* 141 S. Ct. at 1172. The Court then continues in footnote 7 with an example as to why the "store" function is not, in fact, superfluous:

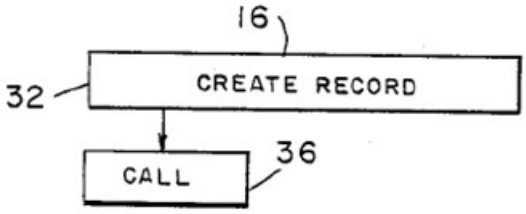
> For instance, an autodialer might use a random number generator to determine the order in which to pick phone numbers from a preproduced list. It would then store those numbers to be dialed at a later time. See Brief for Professional Association for Customer Engagement et al. as *Amici Curiae* 19.
> *Id*.

The Court discusses U.S. Patent 4,741,028 that issued prior to the passage of the TCPA. That patent was discussed in PACE's *Facebook amicus* brief and illustrates how a dialer could incorporate a number generator to store a number for dialing at a later time. Specifically, in that patent, a random number generator was used to select a number from a list, and then store the number in a file for dialing at a later time.

Consequently, it is apparent that the Court was addressing how a number generator could be used to store a number. The Court was demonstrating why it was not superfluous for the statute to recite "store" in the phrase "store or produce." The premise that number generators technically could not store a number was incorrect and citing PACE's *Facebook amicus* brief provides evidence that undercuts one of Duguid's fundamental arguments supporting the broader interpretation.

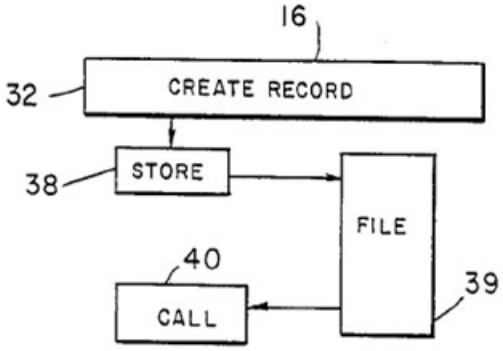
PACE's *Facebook amicus* brief was directly focused on the issue of showing how number generators could store a number. The Summary section of PACE's *Facebook amicus* brief stated that the broad interpretation from the Ninth Circuit in *Marks* and others was predicated on an incorrect understanding of technology, i.e., number generators could not store numbers. (PACE's *Facebook amicus* brief, at 3.) The Summary section of PACE's *Facebook amicus* brief indicated that dialers incorporated number generators in various ways and that were used to process the numbers "either for immediate dialing or to be stored for subsequent dialing." (*Id.*, at 4.) Thus, the Summary section concludes by stating "[w]ith this understanding, it becomes clear that the ATDS definition does not contain surplusage." (*Id*., at 4.)

PACE's *Facebook amicus* brief illustrates how a number generator could be used to store a number by using U.S. Patent 4,741,028 as an example. That patent disclosed how a number generator could produce the number for either 1) immediate dialing, or 2) store the number in a file to be dialed later. PACE's *Facebook amicus* brief illustrated the former function (immediately dialing of the number) by recreating FIG. 2 from U.S. Patent 4,741,028.



Essentially, after the number generator determined the number (which could occur in various ways), the number was incorporated into a call record that was immediately called (i.e., dialed).

PACE's *Facebook amicus* brief also illustrated how the same patent disclosed an alternative to immediate dialing. After the number was determined and incorporated into a record, the record was stored in a file for later dialing, as shown in FIG. 3 from that patent.



If the goal of the TCPA statute was to prevent indiscriminate dialing of sequentially generated or randomly generated numbers, then the statute would have to prohibit both the immediate dialing of such numbers after their generation, as well as the subsequent dialing of such numbers after they were stored in a file. It would utterly frustrate the purpose of the TCPA if the autodialer prohibition could be avoided by simply generating indiscriminate telephone numbers, storing them in a file, and then later dialing those numbers from the file.

Thus, the Court's citation to PACE's *Facebook amicus* brief supports the Court's finding that there is no surplusage when adopting the narrow interpretation of the autodialer definition. Further, because number generators could produce as well as store numbers, the goal of preventing indiscriminate dialing is met by defining the autodialer in the narrow manner as stated.

Focusing on just one sentence from footnote 7 can lead to a distorted conclusion. ("For instance, an autodialer might use a random number generator to determine the order in which to pick phone numbers from a preproduced list".) This could lead one to conclude that the Court was stating that merely using a random number generator for selecting numbers from a list would cause the equipment to fall within the scope of the autodialer definition. Doing so ignores the context of the sentence and that the purpose of the footnote was to illustrate how a number generator could store a number. Further, when considering the immediately following sentence (i.e., that references the number generator storing the number) along with citation to PACE's *Facebook amicus* brief addressing the issue of storing numbers, it is clear that the Court was illustrating how a random number generator could be involved in storing the selected telephone number for subsequent dialing. Thus, footnote 7 references PACE's *Facebook amicus* brief for

purposes of rebutting Duguid's incorrect technical argument that number generators in a dialer could not store a number.

The Court Sought to Avoid A Broad Interpretation of the Autodialer Definition That Encompasses Consumer Smartphones

The Supreme Court avoided broad interpretations that would encompass smartphones. Applying this principle supports the conclusion that "capacity" must be construed as a "present capacity" that is used when making calls. Furthermore, applying this same principle supports the conclusion that the Court implicitly construed a "sequential number generator" as generating sequential telephone numbers. It was not understood to encompass any number that was sequentially generated.

Adopting a broad interpretation of "sequential number generator" that encompasses any number leads to an even broader outcome than what the Supreme Court sought to avoid. That is, broadly interpreting this term would encompass virtually all conventional digital consumer telephones (wireline, cordless, and smartphones). To understand why such an outcome results, and should be avoided, a brief technology primer is required.

A Brief Technology Primer on Telephone Dialing Modes for Originating Calls

Almost all consumer wireline telephones are capable of initiating calls in two dialing modes: dial-pulse dialing and touch-tone dialing. Dial-pulse dialing initiates a series of "clicks" (called dial pulses) to dial each dialed digit. Each click or dial-pulse corresponds to opening and closing a switch connecting the telephone line. These are the same dial-pulses encountered on (the now antiquated) rotary-style telephones. In the 1960s, touch-tone phones were introduced, introducing a new dialing method that involved sending a series of tones when a button or key was pressed. These tones are called "dual tone multiple frequency" ("DTMF") tones and each

tone corresponds to a digit.

Controlling the timing of how these digits are sent – whether dial-pulse or touch-tone - is critical when making a phone call. There are telephony standards that define the timing requirements for sending dial-pulses and touch-tones. For example, when outpulsing a digit, if a user dials the first five digits of a telephone number and waits too long, e.g., 20 seconds, to dial the sixth digit, a "reorder" tone will be played to the caller because the caller waited too long to dial the next digit. If the inter-switch time period is exceeded, the switch will consider the call attempt to have been abandoned. Thus, there is a maximum inter-digit timing defined between digits.

On the other hand, outpulsing a "1" using a dial-pulse and immediately following it by outpulsing a "5" could be interpreted as outpulsing a "6". Thus, there is a minimum inter-digit timing requirement enforced by the central office switch to distinguish between digits. There are also separate minimum and maximum inter-digit timing requirements applicable to touch-tone dialing. There is also a minimum/maximum duration timing associated with the touch-tone generation. For example, pressing a key on a touch-tone telephone for a fraction of a second may generate a tone that is too short to be properly recognized.

In the case of dial-pulse dialing, the timing of these dial-pulses indicating a digit was originally controlled by using a spring in a rotary telephone that controlled a mechanical switch connected to a faceplate. The faceplate was rotated by the user and the spring caused the faceplate to rotate back to the starting position after a digit was dialed. Inter-digit timing was accomplished by the time it took to reposition the user's finger in the corresponding hole.

In a digital telephone this mechanical process is mimicked by an electrical switch that is opened and closed with precisely controlled timing, which causes the clicks to be heard. To

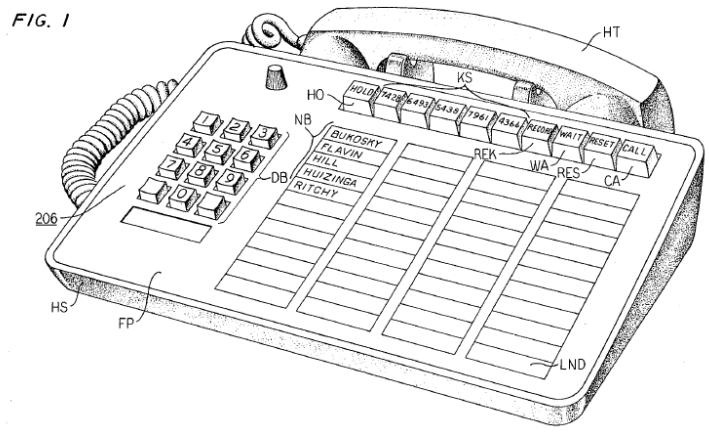
control this timing, electronic telephones use a digital counter. A digital counter (or simply counter) is a digital circuit that presents a number as an output, and that number may count the occurrence of various events, such as a clock signal that periodically cycles. Thus, the output value is incremented in response to detecting the event. The counting of clock cycles allows precise control of the timing when the switch is opened and closed. This technique of counting the frequency of a clock signal to measure time is frequently employed in consumer devices, such as wrist watches and household clocks. For example, wristwatches may count the frequency of a high-frequency quartz electronic oscillator to determine the precise duration of a second. Digital household clocks may count the cycles of the alternating household line voltage to determine a second. Because household AC line voltage oscillates at 60 cycles per second, counting 60 cycles equates to one second; counting 30 cycles corresponds to one-half of a second, etc.

The counting of clock cycles to control the timing of dialing telephone numbers in digital electronic telephone devices is well documented. An Appendix is provided identifying various patents that predate the TCPA by decades, which used counters to control the digits being dialed. (Appendix attached as Exhibit A.) Counters were also used to control how many digits were to be dialed. For example, dialing a local telephone number involves outpulsing seven digits whereas long distance numbers involve outpulsing ten digits (or eleven digits, if counting the "1" used for indicating long-distance calls). Thus, a counter was used to identify how many digits were involved.

Those seeking a broad definition of an autodialer will invariably argue that a sequential number generator could generate any type of number. This would result in a counter found in a consumer telephone being considered a "sequential number generator." However, those skilled

in the art would know that a "counter" is a different function from a "sequential number generator" and their comparative operation, construction, and use, are different.[2]

Adopting this broad interpretation of "sequential number generator" would encompass every instance of using a counter to generate the dialed digits for a telephone call. This would result in virtually all conventional household telephones using digital electronics falling within the definition of an autodialer. This would also encompass virtually all business telephones, including the business telephone set described in Figure 1 of U.S. Patent 3,670,111, shown below:



The Appendix shows how such a phone described in this patent explicitly incorporated various counters to control the production of digits when dialing a telephone number. Other patents in the Appendix illustrate the use of such technology in telephones as well, i.e., using counters to produce the dialed digits. Thus, common residential telephones would fall within the

[2] A sequential number generator creates a set of numbers defined by a lower and upper range, and an incremented amount. See, e.g., https://www.reformattext.com/sequential-number-generator.htm. A counter typically detects an event, and present a numerical value. It is reset before use, so that a known value is used as a starting value. See, e.g., https://en.wikipedia.org/wiki/Counter_(digital).

scope of an "autodialer" if a court adopts a broad interpretation of "sequential number generator."

Furthermore, although smartphones use a different dialing method relative to wireline telephones that use dial-pulse or touch tones, smartphones employ computer processors, which also employ clock generators and counters to control the timing of various internal functions, including the sending of digital information that includes the dialed number. Thus, smartphones would also be considered autodialers under this broad interpretation.

The Supreme Court rejected a broad interpretation of an autodialer in *Facebook* that would result in encompassing commonly used smartphones. Applying a broad interpretation of "sequential number generator" would be *even broader* and encompass not only smart phones, but conventional electronic household and business telephones from the last 50+ years.

III. Conclusion

Congress addressed the nuanced problem of indiscriminately dialing wireless numbers, emergency telephone lines, and multiple sequentially numbered telephone lines by using a scalpel, and not a chainsaw. It is therefore proper to adopt a narrow interpretation of "capacity" as referring to a "present capacity" requiring the use of a random or sequential number generator when making a call. This is consistent with the Court's opinion that requires the technology to be used when making a call. Further, the term "random or sequential number generator" should be properly construed as generating sequential telephone numbers that are dialed. The Court presumed that the number generators were the source of the telephone numbers dialed.

Finally, footnote 7 of *Facebook* describes using a random number generator to select a number and should not be construed as the Court defining an autodialer. Rather, the Court was rebutting the assertion that number generators cannot technically store a number. Adopting the

interpretations proposed herein is consistent with *Facebook* and the problems the TCPA was intended to address; and further avoids an interpretation that encompasses all common telephone and smartphones used by consumers.

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Respectfully submitted,

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APPENDIX A

Background and Purpose

"Counters" are circuits or functions that are commonly encountered in digital systems, such as computers and digitally controlled devices. Counters can be used for a wide variety of purposes and thus there are various types and names associated therewith. In each case, the counter typically presents an output, which is a binary representation of a number, and that number can represent different things. A counter will typically count to a limit, and then 'resets' back to zero. For example, a "decade counter" will count 0-9 and then reset to 0. Other counters will count-down, e.g., counting from 9 to 0, and then resetting to 9. A counter could be used to identify, for example, which digit of a telephone number is currently being outpulsed.

Counters are frequently coupled with a periodic signal (variously known as a "clock", "oscillator", "impulse generator", "pulse generator", etc.) to measure a time period. Household digital clocks, for example, measure time by counting each occurrence that a household AC voltage changes. Since household voltage alternates at 60 cycles per second, counting 60 cycles measures precisely 1 second. Counting 30 cycles measures ½ second, etc.

This appendix identifies three patents that illustrate the use of counters in a digitally controlled telephone for providing the dialed number when originating a call. In order to dial a telephone number, it was necessary (in some instances) to know beforehand whether the number dialed was a 7 digit number associated with a local call, a 10 digit intra-state call, or a 11 digit long distance call. Thus, some of the examples illustrate the use of a counter corresponding to the number of digits in the telephone number. Each digit to be dialed would correspond to a number of dial-pulses. Thus, dialing the number "7" would cause 7 dial-pulses to be originated

by the telephone. Additional time was required between numbers so that the dial-pulses for each number were separately identifiable.

A complete description nor understanding of the relevant circuity in the identified patents is not necessary, nor provided, to establish two main points:

a) Counters are an integral part of the functionality for generating digits in a telephone.

b) Clocks are used provide periodic signals to the counters, which are counted to establish a time period used to generate the dial pulses associated with the dialed digits.

In each case, identification is provided of the function of the counters and clock signals in controlling the timing for sending dial-pulse and touch-tone signals when originating calls. This technology has been incorporated in conventional residential electronic telephones for the last 50+ years.

EXAMPLE 1

A copy is shown below of the first page of U.S. Patent 3,670,111, entitled "*Repertory Dialer Telephone Set With Register Storage Of The Digits*", issued on June 13, 1972.

United States Patent
Bukosky et al.

[15] **3,670,111**
[45] **June 13, 1972**

[54] **REPERTORY DIALER TELEPHONE SET WITH REGISTER STORAGE OF THE DIGITS**

[72] Inventors: **Allen A. Bukosky; Michael A. Flavin**, both of Indianapolis, Ind.; **Donald G. Hill**, Boulder, Colo.; **Donald D. Huizinga**, Indianapolis; **James F. Ritchey**, Carmel, both of Ind.

[73] Assignee: **Bell Telephone Laboratories, Incorporated**, Murray Hill, Berkeley Heights, N.J.

[22] Filed: **Dec. 2, 1969**

[21] Appl. No.: **881,515**

[52] **U.S. Cl.** ..... **179/90 B**, 179/90 BD
[51] **Int. Cl.** **H04m 1/45**
[58] **Field of Search** ..... 179/90 B, 90 BB, 90 BD, 90 AD

[56] **References Cited**

UNITED STATES PATENTS

3,511,933	5/1970	Holmes	179/90 B
3,482,058	12/1969	Guennou	179/90 BB
3,364,314	1/1968	Huizinga	179/90 B
3,342,943	9/1967	Aumuller	179/90 B
3,243,517	3/1966	Miller	179/90 BB
3,428,758	2/1969	Hall	179/90 BB
3,601,552	8/1971	Barnaby	179/90 B
3,588,362	6/1971	Kass	179/90 B
3,555,201	1/1971	Kuehnle	179/90 BD
3,280,269	10/1966	Brown	179/90 BB

FOREIGN PATENTS OR APPLICATIONS

1,036,467	5/1962	Great Britain	179/90 B
1,093,184	10/1964	Great Britain	179/90 B
1,110,606	6/1964	Great Britain	179/90 B

Primary Examiner—William C. Cooper
Assistant Examiner—Tom D'Amico
Attorney—R. J. Guenther and Edwin B. Cave

[57] **ABSTRACT**

In an electronic type repertory dialer telephone set, direct station selection for recording or automatically dialing out is provided by a name button switch array, each button accessing an associated shift register memory. A clock pulser and counter circuit initiates an automatic call sequence in response to the electronic detection of dial tone after a particular memory has been designated.

3 Claims, 9 Drawing Figures

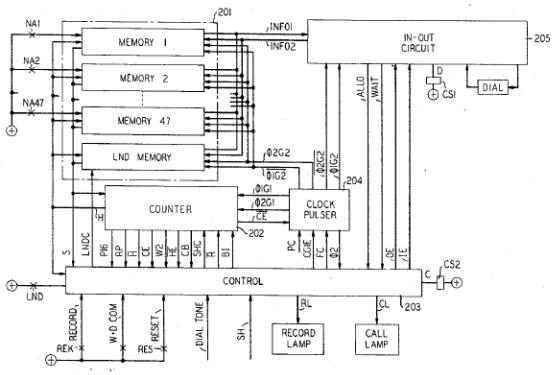
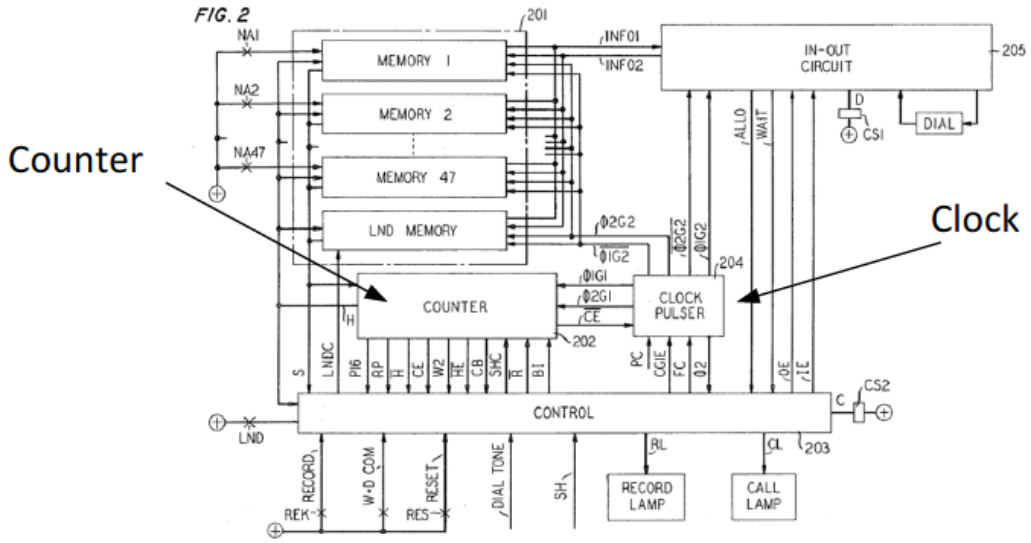


Fig. 2 of the '111 patent clearly discloses the counter receiving clock pulses from the clock function (the clock pulser), identified below:



The Abstract section of the '111 patent specification discloses that the counter is involved in initiating the automatic call sequence involving the dialed digits.

- In an electronic type repertory dialer telephone set, direct station selection for recording or automatically dialing out is provided by a name button switch array, each button accessing an associated shift register memory. **A clock pulser and counter circuit initiates an automatic call sequence** in response to the electronic detection of dial tone after a particular memory has been designated. ('111 Patent, Abstract, emphasis added.)

In addition, other portions of the'111 patent specification disclose the role of the clock and counter is to initiate dialing by sending the dialed digits to the "in-out circuit" 205:

- The counter chip 202 includes a four-bit shift register and a 16-bit shift register SR31 and SR30 respectively as shown in FIG. 6, together with several logic gates. **Clock pulses are counted on this chip** by the two shift registers and information is put out as a result

of the count which is employed to control the logic cycle. The four-bit shift register, which is wired to enable it to count up to eight and to produce an output signal for every four counts, operates on a bit-by-bit basis. During **the first four counts or clock pulses, four binary bits constituting one decimal digit** are shifted from the memory to the shift register SR80 in the in-out circuit 205. During the next four pulses, **this digit is read out of SR80 in parallel to operate the dial 206.** (Patent 3,670,111, column 4, lines 60-72, emphasis added.)

EXAMPLE 2

A copy is shown below of the first page of U.S. Patent 3,718,771, entitled "*Automatic telephone calling apparatus utilizing digital logic devices",* issued on February 27, 1973.

United States Patent [19]
Bank

[11] **3,718,771**
[45] **Feb. 27, 1973**

[54] **AUTOMATIC TELEPHONE CALLING APPARATUS UTILIZING DIGITAL LOGIC DEVICES**

[75] Inventor: **Gilbert Bank,** Highland Park, N.J.

[73] Assignee: **National Midco Industries,** Levittown, Pa.

[22] Filed: **July 7, 1970**

[21] Appl. No.: **52,934**

[52] **U.S. Cl.** .....**179/90 R,** 179/90 B
[51] **Int. Cl.** **H04m 1/44**
[58] **Field of Search**...170/90 BD, 90 B, 90 R, 90 CS, 170/90 AD, 18 BA; 340/359, 365; 307/226, 220

[56] **References Cited**

UNITED STATES PATENTS

3,341,666	9/1967	Wallace	179/90 BD
3,441,685	4/1969	Wallace	179/90 B
3,422,229	1/1969	Wallace	179/90 B
3,555,201	1/1971	Kuehnle	179/90 B
3,515,815	6/1970	Baynard	179/90 B
3,553,387	1/1971	Wells	179/90 CS
3,588,362	6/1971	Kass	179/90 BD

FOREIGN PATENTS OR APPLICATIONS

1,148,135	7/1966	Great Britain	179/90 B
248,323	3/1960	Australia	179/90 B
1,110,606	6/1964	Great Britain	179/90 B
1,093,184	10/1964	Great Britain	179/90 B
1,036,467	5/1962	Great Britain	179/90 B

Primary Examiner—Ralph D. Blakeslee
Assistant Examiner—Thomas D'Amico
Attorney—Lerner, David & Littenberg

[57] **ABSTRACT**

An automatic telephone calling apparatus is disclosed in which a first counter counts dial pulses and a second counter counts the digits of a telephone number. A cross-wiring field permits the detection of coincidence between one of the outputs of each counter and one of the outputs of the other counter. When a coincidence is detected, the dial pulse counter is stopped at the desired number of dial pulses. An interdigital timer is then activated to time out a preselected interdigital interval. Thereafter, the dial pulse counter again begins to count dial pulses and again terminates when the particular count cross wired in the cross-wiring field is reached.

3 Claims, 5 Drawing Figures

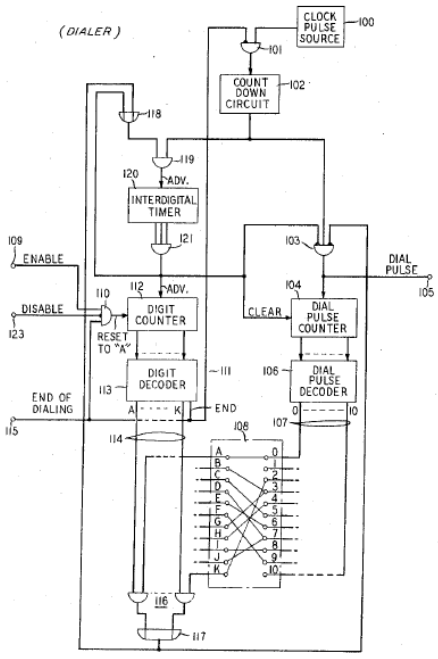
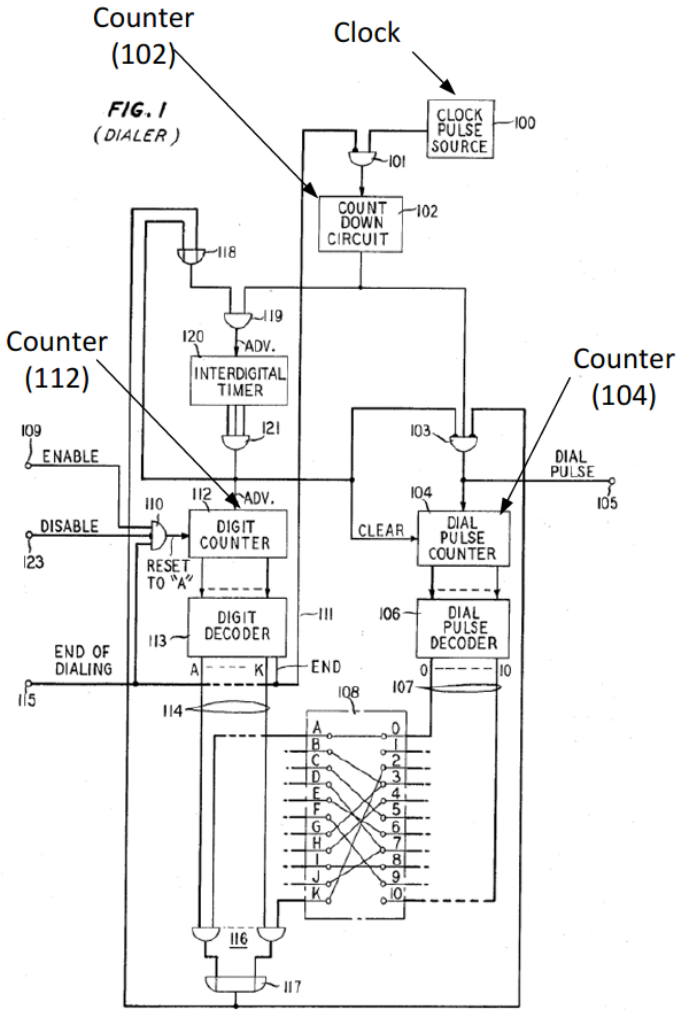


Fig. 1 of the '771 patent clearly discloses several counters. One counter (102) receives clock signals from the clock to produce a "slower" clock signal (i.e., at a lower frequency, which corresponds to the dial pulse intervals.) Another counter (112) is a digit counter, which counts the number of digits to be dialed. The third counter (104) is a counter that counts the number of pulses (originating from counter 102) to be provided to indicate a particular digit.



The '771 patent specification discloses that two separate counters are used - a digit counter and a dial pulse counter are used in producing the output for a telephone number digit.

- The **first counter is used to count dial pulses** while the **second counter is used to count the digits of a telephone numbe**r. Each counter is provided with a decoder at its

> output terminals. These decoders provide signals on one out of a plurality of output leads in response to the value of the input number. These decoder outputs are cross wired to coincidence gates so as to **produce an output for each telephone number digit** when the number of dial pulses reaches a preselected value. Following **each sequence of dial pulses, the dial pulse counter is halted and an interdigital timer is energized to time the interval between dial digits. Following this interval, the dial pulse counter is cleared, the digit counter is advanced by one, and the dial pulse counter is then reenabled to count the next sequence of dial pulses**. ('771 patent, column 1, lines 41-57, emphasis added.)

The role of the counter 102 is describe to countdown the clock source (100) to produce a slower signal, which corresponds to the telephone dialing pulse interval, which is 10 Hz. (This is 10 cycles per second.)

- In any event, the **frequency of source 100 and the countdown ratio of circuit 102 are chosen to provide standard telephone dialing pulses** at the output of circuit 102, e.g., 50 per cent duty cycle, 10 Hz square waves, or any other waveform requirements imposed by the telephone system.

  The output of **countdown circuit 102 is applied through inhibit gate 103 to dial pulse counter 104. The output of gate 103 is also supplied to terminal 105 as dial pulses for transmission on the telephone line**. ('771 patent, column 2, lines 35-44, emphasis added.)

EXAMPLE 3

A copy is shown below of the first page of U.S. Patent 3,787,639, Entitled "*Pushbutton Electronic Pulsing Dial,"* issued on January 22, 1974.

United States Patent [19]
Battrick

[11] 3,787,639
[45] Jan. 22, 1974

[54] **PUSHBUTTON ELECTRONIC PULSING DIAL**

[75] Inventor: **Peter Edward Battrick**, Ottawa, Ontario, Canada

[73] Assignee: **Northern Electric Company Limited**, Montreal, Quebec, Canada

[22] Filed: **Nov. 16, 1972**

[21] Appl. No.: **307,064**

[52] **U.S. Cl.** ..... **179/90 K**
[51] **Int. Cl.** **H04m 1/30**
[58] **Field of Search** ..... 179/90 B, 90 BB, 90 K

[56] **References Cited**
UNITED STATES PATENTS

3,601,552 8/1971 Barnaby et al. ..... 179/90 B

Primary Examiner—Kathleen H. Claffy
Assistant Examiner—G. Brigance
Attorney, Agent, or Firm—John E. Mowle

[57] **ABSTRACT**

An electronic pushbutton dial, which generates dial pulse type signals on a telephone line in response to a digit selected on a pushbutton pad, for signalling step-by-step switching offices. The digit selected is coded and stored in a non-destructive read-write memory and is subsequently loaded into a presettable counter. A pulse generator is arranged to generate and feed dial-pulse-timing signals simultaneously into the presettable counter and to a solid state switch which is in series with the telephone line. The digit selected is transmitted to the central office by interrupting the telephone line current at the dial-pulse-timing signal rate until the count in the presettable counter reaches a predetermined value. The interdigit interval is generated by loading a fixed number into the presettable counter and feeding dial-pulse-timing signals into the presettable counter, while disabling the solid state switch, until the count in the presettable counter again reaches said predetermined value.

14 Claims, 6 Drawing Figures

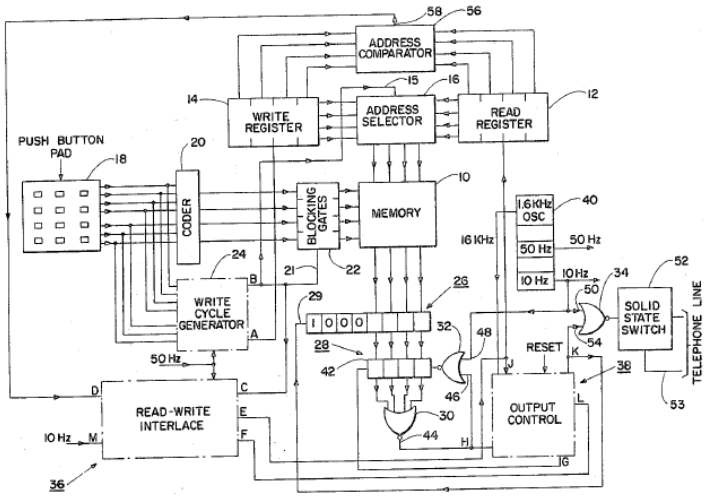


Figure 1 of the '639 patent discloses a clock, which generates various frequencies, including oscillations (called Hertz or "Hz") at 1.6 KHz, 50 Hz, and 10 Hz. The 10 Hz signal is provided to a counter circuit (42).

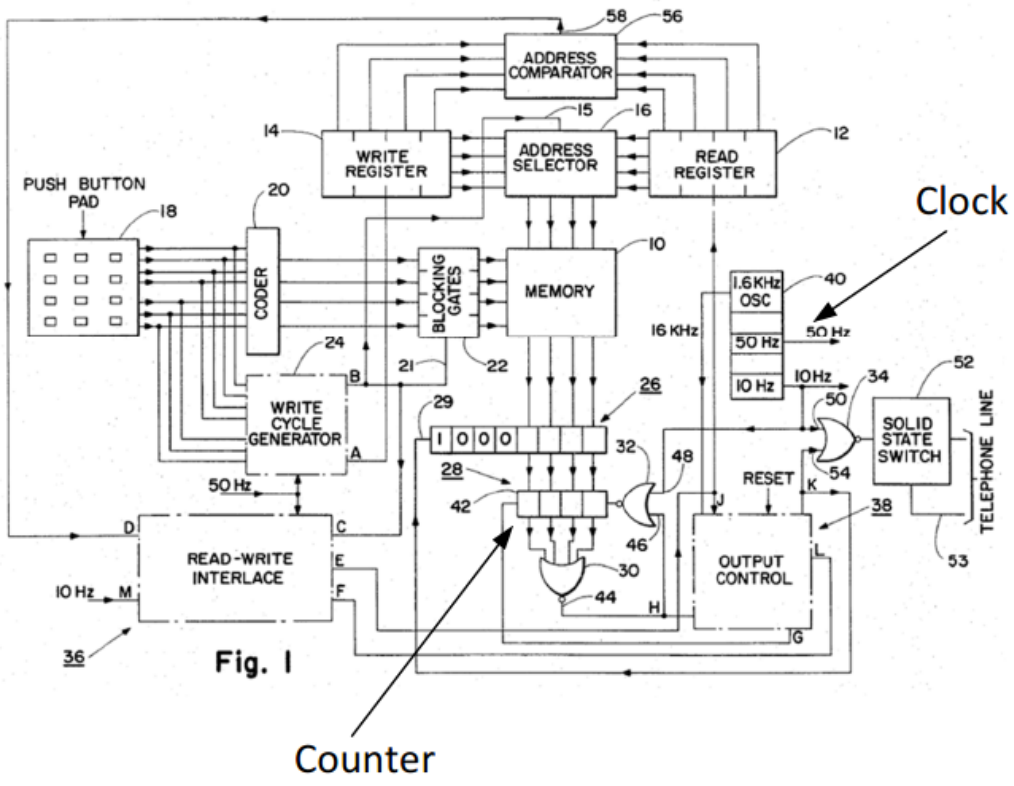


Fig. 1

The '639 patent specification discloses that telephone number digits are generated using a pulse generator (a.k.a. clock) providing signals to a counter, which is used for providing the dial-pulse signals to the telephone line.

- An electronic pushbutton dial, which generates dial pulse type signals on a telephone line in response to a digit selected on a pushbutton pad, for signalling step-by-step switching offices. The digit selected is coded and stored in a non-destructive readwrite memory and is subsequently loaded into a presettable counter. **A pulse generator is arranged to**

generate and feed dialpulse-timing signals simultaneously into the presettable counter and to a solid state switch which is in series with the telephone line. The digit selected is transmitted to the central office by interrupting the telephone line current at **the dial-pulse-timing signal rate until the count in the presettable counter reaches a predetermined value.** The interdigit interval is generated by loading a fixed number into the presettable counter and feeding dial-pulse-timing signals into the presettable counter, while disabling the solid state switch, until the count in the presettable counter again reaches said predetermined value. ('639 patent, Abstract, emphasis added.)

- The input terminal 46 of the first dual input NOR gate 32, which is connected to the outer terminal 44 of the four input NOR gate 30 also drops to its logical 0 state and in so doing **allows dial-pulse-timing signals to pass from the 10 Hz pulse generator into the presettable counter 28.** As the **dial-pulse-timing signals enter the presettable counter 28** a logical 0 level or second enable signal appears at output terminal K of the output control block 38 to enable said one input 54 of the second dual input NOR gate 34 and allow **said dial-pulse timing signals to trigger the solid state switch 52**. ('639 Patent, col 6, lines 57-67, emphasis added.)

- **After the presettable counter 28 has counted a total of dial-pulse-timing signals equivalent to the numerical value of the digit to be transmitted along the telephone line,** all four stages of the presettable counter 28 reach their logical 0 state and, as a result, the output terminal 44 of the four input NOR gate 30 rises to its logical 1 state. As soon as the output of the four input NOR gate 30 rises to its logical 1 state, which signifies the end of the first enable signal, further dial-pulse-timing signals are blocked from the presettable counter by the first dual input NOR gate 32, and the interdigit interval begins. ('639 Patent, col. 7, lines 1-11, emphasis added.)

CERTIFICATE OF SERVICE

The undersigned does hereby certify that the foregoing was filed with the Court's ECF system on May 28, 2021, which will notify all counsel of record in this matter.

Lewis Brisbois Bisgaard & Smith LLP

/s/ Andrew Bluth
Andrew Bluth (California Bar # 232387)