Description

Title

System and Method for Automated Office Action Response Generation and Submission

Field of the Invention

The present invention relates generally to computer-implemented tools for patent prosecution. In particular, it concerns a software system for automating the analysis of patent Office Actions and the preparation of responsive filings, integrating with the United States Patent and Trademark Office (USPTO) electronic systems.

Background of the Invention

Responding to patent Office Actions is a labor-intensive task for practitioners. After receiving an Office Action (an official letter from the patent office stating rejections/objections), an attorney must carefully parse the examiner's rejections, draft response arguments and claim amendments, prepare any ancillary documents (such as Information Disclosure Statements (IDS) or Requests for Continued Examination (RCE)), calculate deadlines and fees, and then file the response via the USPTO's online systems. Various software tools exist to assist with parts of this process, but none provide a fully integrated, end-to-end automation solution as described herein.

For example, Patent ClaimMaster (a Microsoft Word™ plugin created by a patent attorney) can help generate templates for Office Action response documents and perform tasks like claim proofreading and fee calculations. Such tools speed up drafting by creating Office Action response shells and checking for formal errors. However, they operate largely as document editing aids and require the practitioner to manually input Office Action details and finalize the response. They do not autonomously ingest official communications or handle the submission process.

Likewise, IP docket management systems such as FoundationIP (Clarivate) focus on tracking deadlines and organizing correspondence. These systems can perform automated docketing — for instance, processing incoming USPTO email notifications to calendar response due dates . While this prevents missed deadlines, these systems stop short of generating response documents. They neither interpret the substantive rejection content nor draft replies. Other portfolio management tools (e.g., Clarivate's First-to-File or similar docketing software) integrate email intake and remind attorneys of due dates, but the actual work of formulating a response remains manual.

Recently, AI-assisted drafting tools have emerged that leverage natural language processing to help write patent documents. For example, one service provides a Word plugin that can generate Office Action response text using AI and even integrates with docketing systems like FoundationIP and USPTO's Patent Center. This shows that practitioners are beginning to trust AI for first drafts of responses. However, such tools still operate within the traditional workflow (e.g., inside Word), requiring the user to copy-paste examiner rejections and later manually upload the finalized documents. Crucially, no existing solution fully automates the entire workflow from Office Action notification to verified USPTO submission, including preparation of all requisite forms and dynamic adjustment of strategy (such as adding an IDS or RCE and recalculating deadlines).

In summary, the prior art provides piecemeal assistance: proofreading and template generation by ClaimMaster, docketing by FoundationIP, or AI text suggestions by recent tools. None combine these functions into a unified system that automatically receives an Office Action, interprets its contents, drafts a complete response (arguments, claim amendments, and supporting documents), verifies compliance with USPTO rules, and actually files the response on the attorney's behalf with minimal manual intervention. The present invention fills this gap by offering a comprehensive automation platform for Office Action responses, with attorney oversight built-in for ethical and legal compliance.

Summary of the Invention

The invention provides a computer-implemented system and corresponding method to automate the process of responding to patent Office Actions. The system tightly integrates with the USPTO's electronic communication platforms (such as MyUSPTO and Patent Center) to ingest Office Action notifications, use advanced parsing and AI to generate a draft reply, assemble all required ancillary documents, and facilitate electronic submission of the response, all while keeping a human practitioner in control.

In one aspect, the invention is a software system comprising multiple modules that work in concert to handle Office Action response workflows end-to-end. Key components of the system include:

- Secure Communication Module (101): Retrieves official USPTO communications (e.g., Office Action notices and attachments) securely, for example via an email IMAP

connection to the user's e-Office Action inbox or via direct USPTO API when available. This module ensures the data transfer is encrypted and authenticated, and can poll or receive push notifications of new Office Actions.

- Parser Module (102): Automatically extracts structured data from Office Action documents. It can parse machine-readable formats like XML (from the USPTO's e-Office Action program) to extract metadata (application number, dates, examiner, art unit, etc.) and identify each rejection or objection and the affected claims. It can also perform optical text extraction on PDF attachments if needed, using natural language processing to recognize rejection types (35 U.S.C. §101, §102, §103, §112, etc.) and key content.

- Deadline Calculator (109): Computes the statutory deadline for response and any applicable extension deadlines. For example, it determines the three-month default reply period (non-final Office Action) or shortened final period, and calculates fees for extensions up to the six-month statutory limit . This module updates the case docket with due dates and reminders, ensuring that even if additional documents (like an IDS or RCE) are later added, the final deadlines remain correctly calculated.

- Response Generation Engine (103): A fine-tuned Large Language Model (LLM) that drafts Office Action responses. Trained on the MPEP, past successful responses, and patent prosecution best practices, this AI engine generates argument text and claim amendments addressing the examiner's rejections. For example, it will draft arguments distinguishing cited prior art for a §103 obviousness rejection or explaining amendments for a §112 clarity rejection. The LLM is tailored to maintain the proper tone (respectful and legalistic) and format (for instance, including headings for each rejection and proper claim status identifiers) as required by the USPTO.

- Compliance Validator (104): Checks the draft response and associated documents for conformance with USPTO rules and formal requirements. This rule-based engine (optionally supplemented by AI) verifies that the response meets 37 C.F.R. formatting rules and MPEP guidelines – for example, that claim amendments follow proper underline/strikethrough format, all referenced figures or claims exist, IDS forms are filled out correctly, and required signatures and certifications (per 37 C.F.R. 1.130, 1.131, 1.132 affidavits or 37 C.F.R. §1.97/§1.98 for IDS) are present if needed. The validator flags any issues for correction to ensure filings won't be bounced as non-compliant (a motivation behind tools like ClaimMaster).

- Document Assembly Module (110): Automatically prepares ancillary documents to accompany the Office Action reply. This includes generating an Information Disclosure Statement (IDS) if new references need to be disclosed (populating USPTO forms like SB/08 or equivalent), preparing fee calculations and forms for extensions or an RCE (e.g., form SB/30 and the appropriate fee codes), and drafting any necessary petitions or cover sheets. The module uses the parsed data – for instance, listing the references cited by the examiner and any additional ones the attorney has marked for submission –

to fill in forms. It dynamically adjusts the workflow: if, for example, an RCE is to be filed (perhaps because the Office Action is final and further amendment is needed), the system incorporates the RCE document and fee, and understands that the "response" will technically be an RCE filing rather than a normal reply, thus resetting the deadline calculations accordingly.

- User Interface Module (Attorney GUI 106): A secure web-based or desktop interface through which the practitioner can review the AI-generated draft response and all assembled documents. The GUI presents the Office Action content side-by-side with the draft reply for context. It features editing tools for the attorney to modify the text in real-time, accept or reject suggested changes, and insert any personal legal arguments. The interface also provides prompts or checklists (generated by the system) highlighting any additional actions the attorney might need to take (for example, "Reference X cited by examiner – confirm if already disclosed or include IDS"). Once satisfied, the attorney can apply their electronic signature within the GUI.

- Submission Adapter (105): This module automates the electronic filing of the final documents via the USPTO's Patent Center or EFS-Web interface. In absence of a public filing API, the adapter employs a secure, headless browser automation to emulate the practitioner's actions on Patent Center – uploading PDF responses, selecting document codes, paying fees from deposit accounts, and confirming submission. The module uses stored credentials (with appropriate authorization) to log in, and can operate in a "simulation mode" for the attorney to preview what will be filed. Upon actual submission, it captures the Filing Receipt or confirmation number for record-keeping.

Critically, all these components are integrated such that the entire process can execute with minimal manual effort, while keeping the attorney informed and in control at key decision points. The system's design allows it to adapt if the prosecution strategy changes mid-process – e.g., if during review the attorney decides to add an IDS or file an RCE, the system automatically updates the required documents and deadlines (by invoking the Document Assembly 110 and Deadline Calculator 109 modules again) and re-validates compliance.

Another aspect of the invention is a computer-implemented method embodying the above functionality. The method automates responding to an Office Action by performing steps of retrieving the Office Action, parsing it, generating a response draft, verifying compliance, obtaining approval, and filing the response. This method can be executed by the system modules or by a processor executing instructions (such as from a non-transitory computer-readable medium) that implement the modules.

A further aspect is a non-transitory computer-readable medium storing program instructions that, when executed, cause a computer system to carry out the automated Office Action response method. This medium (e.g., a cloud server storage or local disk) includes code for each functional module described, enabling an integrated deployment of the invention.

The invention also incorporates safeguards to comply with legal and ethical regulations. It is designed as an assistive tool for licensed practitioners, not a replacement. The attorney remains "in-the-loop," required to review and approve the AI-generated content. All actions taken by the system on behalf of the attorney (such as filing a response) are done under the attorney's authority and use their stored credentials, with appropriate logging and confirmations. This ensures that use of the system does not violate rules against unauthorized practice of law (UPL) and satisfies the practitioner's duty of care. For instance, USPTO regulations like 37 C.F.R. §11.18(b) require that any paper filed by a practitioner is truthful and not submitted for any improper purpose. The system aids compliance with this rule by requiring the practitioner's sign-off and by maintaining an audit trail of how the response was generated and edited. All data is handled with high security (encryption, multi-factor authentication for credential access) to maintain confidentiality and integrity.

In sum, the invention provides a comprehensive solution that streamlines patent prosecution workflow by automating Office Action responses. By combining secure communication, intelligent document parsing, AI-driven drafting, rule-based validation, and direct integration with USPTO filing systems, it significantly reduces the time and effort required to respond to Office Actions while minimizing errors. The practitioner benefits from faster turnaround, lower risk of missed deadlines or formatting mistakes, and more time to focus on substantive legal strategy rather than clerical tasks. This automation can cut response preparation time dramatically – for example, attorneys report that AI-assisted drafting can halve their writing time – and ensures greater consistency and completeness in responses. The inventive system distinguishes itself from prior art tools by covering the entire process from start to finish in one platform, thereby improving efficiency and reliability in patent prosecution.

Brief Description of the Drawings

FIG. 1 is a system architecture diagram of an example embodiment of the automated Office Action response system, illustrating its main functional modules and data flows.

FIG. 2 is a flowchart showing an example process for automated Office Action response generation and submission, according to one embodiment of the invention.

FIG. 3 is a schematic depiction of an attorney user interface for reviewing and approving the generated Office Action response, showing various interface elements.

Detailed Description of Embodiments

FIG. 1 illustrates an overview of the Office Action Response Automation System in one embodiment. The system's components are represented as modules that interact to process an Office Action and produce a response. As shown, the system comprises several modules and support components, each identified by a reference numeral:

- Secure Communication Module (101): Receives Office Action communications from the USPTO. In practice, module 101 may connect to an email server to fetch e-Office Action notification emails (via IMAP/POP protocols) or interface with USPTO web services/APIs to detect new Office Actions. It downloads the official Office Action documents (e.g., an XML metadata file and a PDF of the Office Action letter) securely. In FIG. 1, the arrow from the USPTO communication cloud into module 101 represents this intake of data.

- Parser (102): Processes the downloaded Office Action documents to extract key information. The parser 102 uses NLP and XML parsing to identify each rejection or objection raised by the examiner, the related claim numbers, cited prior art references, and any requirements (like restrictions or election of species). It outputs a structured representation of the Office Action, which is then available to other modules. In FIG. 1, module 102 passes parsed data onward in the pipeline (as indicated by the arrow to subsequent components).

- Deadline Calculator (109): Computes response deadlines based on the Office Action type and date. For instance, if the Office Action is non-final, module 109 sets an initial reply deadline 3 months from the Office Action issue date (with further extensions up to 6 months maximum), whereas for a final Office Action, it may determine a shortened statutory period and note any after-final considerations. This module 109 may update a docketing system or calendar (not explicitly shown in FIG. 1) with these dates and provides feedback to the user interface 106 about time remaining and extension fees.

- LLM Response Generation Engine (103): Generates a draft response document. Module 103 uses a fine-tuned large language model to compose reply arguments addressing each rejection. It takes the structured output from parser 102 (and possibly additional context such as the application's specification or claim set) as input. The LLM engine then produces text for an Office Action response, including an introductory section, argument sections for each rejection, and concluding statements. It may also propose claim amendments (for example, by appending suggested claim language marked with underlining for insertions and strikethrough for deletions) when appropriate to overcome rejections. The draft output by module 103 is passed to validation 104 and to the assembly module 110 for further processing.

- Compliance Validator (104): Checks the draft response for compliance and completeness. This module, as depicted in FIG. 1, receives the draft from the LLM engine 103. It verifies formalities such as ensuring that all rejections identified by parser 102 have corresponding rebuttal sections in the draft, that claim amendments are numbered correctly and have proper markings, and that required statements or affirmations (for example, any needed §1.97(e) statements for an IDS or §1.181 petition language) are included. If validator 104 finds an issue (like a missing response to a rejection, or an improper amendment format), it can either automatically correct it (for straightforward issues) or flag it for the attorney to address in the GUI 106. The validator also ensures that nothing in the draft violates USPTO ethical rules (e.g., it might flag

language that promises outcomes or uses inappropriate tone, etc.). The output of module 104 is a validated draft (or a list of issues) sent to the attorney's GUI.

- Document Assembly Module (110): Prepares additional documents required for the response package. After the LLM 103 produces the main response text, module 110 determines what extra forms or documents are needed. In FIG. 1, module 103 is shown feeding into module 110, indicating that the content generated (and parsed data from 102) is used to fill forms. For example, if the Office Action includes new prior art citations, module 110 will prepare an IDS (itemizing those references on the proper PTO/SB forms) for the attorney's review. If an RCE is being filed (perhaps because the action is final and further amendments are needed), module 110 generates an RCE transmittal and calculates the fee. This module also handles generating any necessary extension of time fee calculations or petitions (like a petition to withdraw an application from issue, etc., if applicable). All these documents are compiled so that the entire response package is complete.

- Attorney Review GUI (106): Provides a user interface for the practitioner to examine and edit the drafts before submission. As indicated in FIG. 1, both the output of the validator 104 and the assembled documents 110 flow into the GUI 106 (arrows from both 104 and 110 into 106). Through this interface, the attorney can view the Office Action (raw text or PDF), alongside the system's drafted response and forms. The attorney-in-the-loop can make any changes directly in the draft, add remarks, approve or reject suggestions, and attach any additional remarks or documents. The GUI also shows the computed deadlines and fees (from module 109) to keep the practitioner aware of timing. Only after the attorney is satisfied does he/she apply an electronic signature or approval flag in the GUI, which then enables forwarding the package to submission.

- Submission Adapter (105): Handles the actual electronic filing of the approved response documents. As shown in FIG. 1, the final approved package from GUI 106 is sent to the submission adapter 105. This module logs into the USPTO's Patent Center (or EFS-Web) on behalf of the user (using stored credentials from vault 107) and programmatically uploads each document (response PDF, IDS PDF, any forms, etc.) to the system, selecting the correct document descriptions (like "Amendment/Reply," "Information Disclosure Statement," etc.). In the absence of a direct USPTO API, the adapter uses headless browser automation to navigate the Patent Center web portal. It enters any required metadata (confirmation numbers, application number, etc.) and submits the filing. The adapter 105 then waits for and retrieves the official confirmation, which it returns to the user (and records in the audit log 108).

In addition to the main workflow modules above, FIG. 1 also shows two support components that underpin the system's security and accountability:

- Credential Vault (107): A secure storage for the practitioner's USPTO login credentials and any required cryptographic keys or certificates. Module 107 is depicted in FIG. 1

feeding into the Submission Adapter 105, indicating that when module 105 needs to authenticate to Patent Center, it retrieves the stored credentials (username, password, and/or certificate) from the vault. The vault 107 uses strong encryption (e.g., hardware security module or vault software) and can require multi-factor authentication (MFA) when the attorney initially sets it up or accesses it. This ensures that sensitive credentials are protected and that only authorized users (the attorneys) can initiate filings. In some embodiments, the vault might integrate with the USPTO's two-step authentication (e.g., generating a one-time code that the user must input) so that automated filings still satisfy security requirements.

- Logging & Audit Trail (108): Records all significant actions and decisions in the system for accountability and compliance purposes. Module 108 (shown in FIG. 1) receives inputs from all major modules (depicted conceptually by dotted monitoring lines from the modules to the log 108). For example, it logs when an Office Action was received by module 101, when parsing was completed by module 102 (and what key data was extracted), the content of the AI-generated draft from module 103, any changes made by the attorney in GUI 106, and the final submission time by module 105 along with a confirmation number. This audit trail allows the practitioner or an auditor to later review what information the AI used and what modifications were made, which is important for ethical oversight. The logging module 108 helps ensure transparency in how the response was prepared, supporting the practitioner's obligations under USPTO rules (e.g., if ever questioned, the record can show that the practitioner reviewed the AI's draft, etc.). The audit data can be stored securely and anonymized as needed for compliance reviews or future training improvements.

Overall, FIG. 1 illustrates a system in which modules 101 through 110 operate sequentially and in parallel as needed to automate the Office Action response process. The numbered data flows in the figure show the progression: the Office Action enters at 101, is interpreted, a draft is generated at 103, verified at 104, supplemented with forms at 110, reviewed by the attorney at 106, and finally submitted via 105. Supporting modules 107 and 108 ensure that the process is secure and auditable. This architecture enables the end-to-end functionality of the invention.

FIG. 2 is a flowchart depicting an example automated Office Action response process as implemented by the system. The process is broken into steps, each corresponding to major functions of the modules described above. The flowchart shows the logical sequence and decision points in the method. In the illustrated embodiment, the steps are as follows:

- Step 201: Receive Office Action. The process begins when an Office Action is received by the system. The secure communication module (101) detects that a new Office Action has been issued (for example, by receiving an email notification or polling an API). At this step, the system securely downloads the Office Action documents and associated metadata. The incoming communication may include an XML file (with bibliographic data and rejection summaries) and a PDF of the Office Action. This corresponds to module

101 in FIG. 1 retrieving the data.

- Step 202: Parse and Extract Data. Next, the parser (102) automatically processes the Office Action documentation. In this step, the system extracts key information such as the type of Office Action (non-final, final, advisory, etc.), the list of rejections and objections, cited prior art references, applicant's claim numbers involved, and any USPTO forms or notices included. For example, if the Office Action is non-final with a §103 rejection based on two prior art references, the parser identifies the rejection type (obviousness), the cited references (by number and title), and which claims are rejected. This structured data is saved for use in subsequent steps.

- Step 203: Calculate Deadlines. Using the information from parsing, the system calculates the relevant response deadline. Here, the deadline calculator (109) determines the statutory reply period. For instance, if Step 201's Office Action mailing date is January 1, and it's a non-final rejection, the system sets an initial due date of April 1 (three months) and knows that extensions up to six months (July 1) are possible with fees . If the Office Action is final, it might set a shorter deadline (e.g., two-month deadline for response or filing an RCE after final, plus extension options). The system may also compute the actual last date to respond after considering any federal holidays or PTO closures. This deadline info is recorded and will be shown to the user in Step 208 (attorney review) and used if extensions are needed.

- Step 204: Generate Draft Response. At this stage, the LLM engine (103) produces a draft reply addressing the Office Action. The system uses the structured data from Step 202 as input to the AI model. The LLM composes a response document: for each rejection, it drafts an argument or amendment. For example, for a §102 rejection, it may write a section arguing that the cited reference fails to disclose a particular element of the claim; for a §112 enablement issue, it might draft an explanation of where the specification provides support. The LLM ensures the draft follows common Office Action response format (including an introductory paragraph identifying the application, an overview of the response, and headings for each rejection). The output of this step is a complete draft response document, which can be in text or word processing format.

- Step 205: Validate Compliance. After drafting, the system automatically reviews the draft for compliance and correctness using the validation module (104). In this step, the system checks for any formal errors or omissions. For instance, it verifies that all independent claims identified as rejected have been addressed in the argument; it checks that any claim amendments are properly marked and numbered; it ensures that the response follows the required format (margins, font size, etc.) and contains no forbidden content (like new matter). The validator also ensures that if any ancillary forms are needed (e.g., an IDS if new references need to be disclosed), those will be prepared. If the validator finds issues that it can fix (such as minor formatting problems), it may correct them here; otherwise, it flags them for the attorney to see in Step 208.

- Step 206: Additional Documents Needed? This is a decision point in the process flow. The system evaluates whether additional documents (besides the main response document) are required to fully respond to the Office Action. For example, is an IDS needed? This would be yes if, say, the examiner cited references that the applicant has not yet cited or if the applicant wants to submit new prior art references. Or, is an RCE or Notice of Appeal needed? For a final Office Action, if the applicant chooses to continue prosecution with amendments, an RCE would be needed; if the applicant decides to appeal, a Notice of Appeal document would be needed instead of (or in addition to) an amendment. If the decision at step 206 is Yes (additional documents are required), the process branches to step 207; if No (the basic response is sufficient), the process skips to step 208.

- Step 207: Assemble Required Documents. In this step (executed if the result of step 206 was Yes), the Document Assembly module (110) generates the necessary ancillary documents and integrates them into the response package. For an IDS, the system prepares an Information Disclosure Statement listing all new references along with PTO/SB08 forms, including bibliographic data of each reference (e.g., publication number, date, etc.) and the proper certification statements if outside the initial three-month window (to avoid fees under 37 C.F.R. §1.97). For an RCE, the system fills out the RCE transmittal form and calculates the fee (which it may retrieve from USPTO fee schedules). For an Appeal, it would draft a Notice of Appeal form and potentially a pre-filled Appeal Brief template. The system also adjusts the deadline calculations from step 203 if needed (for example, filing an RCE means the "deadline" for response to the final Office Action is mooted and replaced by a new Office Action timeline after the RCE). All these documents are prepared and packaged alongside the main response document. Once this assembly is done (or if no extra documents were needed), the process continues to the next step.

- Step 208: Attorney Review & Approval. At this step, the draft response (from step 204/205) and any additional documents (from 207) are presented to the human attorney through the GUI (106). The attorney can scroll through the Office Action text and the system's draft response, which may be displayed side by side. The system highlights how each rejection was addressed, and flags any validator warnings from step 205 (for example, "claim 3's response missing?" or "hyperlink removed for e-filing compliance"). The attorney reviews every part for substantive accuracy and legal adequacy. They may edit the arguments, change the wording to better fit legal strategy, or instruct the LLM to regenerate a particular section if needed (the system can accommodate iterative improvement at this stage). The attorney also reviews any assembled forms from step 207 (e.g., checking the IDS for accuracy of listed references, verifying the RCE request, etc.). The GUI might provide checkboxes or prompts (like "☑ Confirm IDS references have been reviewed"). Once the attorney is satisfied with the entire package, they approve and electronically sign the documents. This approval is captured by the system (e.g., applying a digital signature to PDF documents or logging the attorney's

affirmation).

- Step 209: Submit via Patent Center. After approval, the system proceeds to file the response with the USPTO. In this final step, corresponding to the Submission Adapter (105), the system uses the stored credentials to log in to the USPTO Patent Center and uploads the response document and any supporting documents. The system automatically selects the correct submission type (reply to Office Action, etc.), attaches the prepared PDFs (amendment, IDS, forms), and submits the filing. If extension fees are required (determined in step 203 and confirmed by the attorney), the system also handles the fee payment at this step (for instance, charging the provided USPTO deposit account or credit card on file, by interacting with the Patent Center fee payment interface). Once submission is completed, the USPTO typically provides an Electronic Acknowledgment Receipt – the system captures this receipt (which contains the date/time of submission and confirmation number). The process then ends, having successfully filed the Office Action response. A notification of success (with the confirmation details) can be sent to the attorney, and the docket can be updated to indicate that a response was filed on a certain date.

The flowchart of FIG. 2 thus encapsulates the end-to-end method: from receiving an Office Action through drafting and filing a reply. It highlights that the system can dynamically branch to include additional documents if needed and requires attorney sign-off before filing. This ensures that while the process is highly automated, it remains under the control of a human practitioner at the critical juncture (step 208) to maintain professional responsibility and compliance.

FIG. 3 shows an example Graphical User Interface (GUI) (106) for the attorney to review and interact with the Office Action response materials. This figure illustrates a possible layout of the interface and identifies key elements that facilitate the attorney-in-the-loop review process. In the depicted embodiment, the interface includes the following numbered components:

- 106 – Overall Interface Window: The main application window for the Office Action response review system. (In FIG. 3, element 106 is labeled at the top of the window.) This secure interface may be a web-based dashboard or a desktop application that the attorney uses to manage responses.

- 301 – Office Action Viewing Panel: A section of the GUI that displays the text of the Office Action. In FIG. 3, the left side of the window (element 301) is dedicated to showing either the original PDF of the Office Action or an extracted text version. This allows the attorney to read the examiner's rejections and comments directly within the interface. The panel can support features like text search, or quick jumping to sections (e.g., to the first rejection, second rejection, etc.).

- 302 – Draft Response Editing Panel: On the right side of the interface, element 302 displays the AI-generated draft response corresponding to the Office Action. This panel is essentially a rich text editor populated with the output from the LLM (103) and any

subsequent modifications. The attorney can scroll through the draft reply, which will be formatted with headings and claim marks as it will appear in the final submission. The editing panel allows the attorney to make changes: typing revisions, cutting or pasting text, or even invoking AI suggestions for selected text (for example, the user might highlight a paragraph and ask the system for an alternative wording). The panel may highlight portions that the validator (104) flagged – for instance, if a certain argument might be missing, the system could insert a comment or placeholder in the text for the attorney to address.

- 303 – Approve & E-sign Button: A prominent control (element 303) that the attorney clicks once they are satisfied with the response and any ancillary documents. Activating this "Approve & Sign" button will trigger the system to affix the attorney's electronic signature to the documents (using a stored digital signature or by generating a signature packet to be confirmed) and mark them as ready for submission. The system may prompt for a final confirmation (to ensure that this action is intentional, given its significance).

- 304 – Save Draft Button: A button (element 304) that allows the attorney to save the current state of the draft response without submitting. This lets the attorney pause and resume work later. Pressing "Save Draft" can store the draft content back to the server or locally, along with the current review state (e.g., which sections are confirmed, which need attention). This is useful if the attorney wants a colleague to review the draft, or simply to maintain backups of the work in progress.

- 305 – Submit via Patent Center Button: Another action button (element 305) that initiates the actual submission process (Step 209 of FIG. 2). This might be enabled only after the "Approve & E-sign" step has been completed by the attorney. When clicked, the system will begin the automated filing through Patent Center. In some implementations, this might be combined with the approve action (i.e., a single button does both sign and submit). In FIG. 3, it is shown separately to indicate a scenario where an attorney might sign the documents but schedule or trigger the submission at a later time (for example, filing just before a deadline). Once pressed, the interface would likely show a progress indicator as the Submission Adapter (105) logs in and uploads files, and then display a confirmation message or receipt once done.

In addition to the labeled elements, the GUI can have other features not explicitly numbered in FIG. 3: for instance, a panel showing metadata (application number, art unit, examiner name, days until deadline), or a checklist of tasks (e.g., "☒ All rejections addressed", "☒ IDS prepared for 3 references", etc.), or a log view showing actions the system took (from audit log 108). There may also be a toggle to view the differences between the current draft and a previous draft, helping attorneys track changes.

The example interface emphasizes user control and clarity. By seeing the Office Action and response together (301 and 302), the attorney can easily ensure that every point raised by the

examiner is met with a rebuttal or amendment. The presence of explicit approval and submission controls (303, 305) underscores that the attorney actively triggers the final steps, preventing any unauthorized filing. The design of the GUI thus supports an efficient review while upholding the attorney's ultimate responsibility over the content.

Ethical and Regulatory Safeguards

The described system is built with features that ensure compliance with legal ethics and USPTO regulations throughout the automated process. As noted, the attorney remains in control of the content and submission:

- The system will not file any response until the practitioner has reviewed and approved the documents. This prevents accidental or unvetted submissions, thereby avoiding potential breaches of the attorney's duty to personally supervise filings and certify their appropriateness under 37 C.F.R. §11.18(b). By presenting the draft to the attorney and requiring an explicit approval (see element 303 in FIG. 3), the system aligns with the idea that the practitioner is the one "presenting" the paper to the USPTO, as required by USPTO rules. The attorney's approval action is effectively the digital equivalent of a signature, which carries the certification that a reasonable inquiry has been made and the content is truthful and not frivolous.

- The audit log (108) keeps a detailed record of the drafting process, including the AI's contributions and the user's modifications. This log serves multiple purposes: it allows the practitioner to demonstrate that they took reasonable care in reviewing the AI-generated output, and it can be used internally (or by regulators if ever needed) to ensure that the tool is being used as intended (for example, to audit that an attorney is not just blindly accepting AI output without review). The log entries might timestamp each section approval or edit. Such transparency discourages any misuse that could verge on unauthorized practice of law, as any lack of attorney involvement would be evident from the records.

- The system incorporates knowledge updates and compliance checks to ensure the AI's output stays within legal boundaries. The LLM (103) is trained on appropriate sources (e.g., the Manual of Patent Examining Procedure and prior responses) and is constrained to produce formal legal arguments, not to speculate or introduce unsupported statements. Additionally, the validator (104) can flag content that might raise ethical issues – for instance, if the AI were ever to insert language that is overly combative or includes information not of record, the validator or the design of the LLM ensures such content is avoided or highlighted. This acts as a safeguard against violations of candor or misrepresentation.

- Unauthorized Practice of Law (UPL) considerations: The invention is provided as a tool for licensed patent professionals (attorneys or agents). It is not intended for pro se applicants to generate responses without understanding, nor for non-lawyers to use on

behalf of clients. The secure credential vault (107) and user authentication ensures that only authorized practitioners can use the system to file responses. Moreover, the system's need for practitioner input (particularly at the review stage) means the final work product is always the result of a practitioner's professional judgment, not just an AI's output. This is consistent with guidance indicating that while AI tools can be used to assist, the practitioner must ultimately exercise judgment and oversight. The invention thus helps practitioners be more efficient, but it does not replace them; it requires their involvement in a manner that respects legal boundaries.

- Certification and Petition Compliance: The system automatically includes any needed certifications or statements to comply with USPTO rules. For example, if an IDS is generated after the first three months of an Office Action, the system will include the necessary §1.97(e) statement or identify that a fee is needed, thereby preventing an inadvertent omission that could violate disclosure rules. If a final Office Action is responded to with only arguments (no amendment), the system might prompt the user about the after-final consideration request option or an advisory action timeline. These measures keep the practitioner aware of procedural options and requirements, further ensuring that the response is comprehensive and compliant.

- Security and Confidentiality: Because patent prosecution involves confidential client information and potentially invention details, the system emphasizes data security. The communications module (101) and credential vault (107) use encryption for data in transit and at rest. The AI model can be hosted in an environment that guarantees confidentiality (e.g., a private cloud or on-premises server) so that sensitive data is not exposed to third-party services. Many law firms are concerned about data leakage with AI – this invention addresses that by containing the AI within a secured application context. All these precautions align with practitioners' ethical duty to protect client information.

Through these safeguards, the system is designed to function not just as a technical tool, but as a responsible assistant to the practitioner, adhering to the same standards a diligent human would. By automating routine aspects while enforcing checks and balances, the invention improves efficiency without compromising on quality, ethics, or compliance. This thoughtful integration of automation with human oversight is what sets the invention apart and makes it suitable for widespread adoption in the patent prosecution field, potentially setting a new standard for how Office Actions are managed in the future.