PROVISIONAL PATENT APPLICATION SPECIFICATION

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ASSIGNEE: Owner/Assignee - John Lawrence Coulson

STATUS: Micro Entity

STRATEGIC DEPLOYMENT: Global Decentralized Licensing

TITLE: OMNI-DOMAIN AUTONOMOUS KINETIC DECOUPLING PROTOCOL FOR MARITIME, AEROSPACE, AUTOMOTIVE, AND INDUSTRIAL SAFETY, INTEGRATING HYBRID POWER BUFFERS, GATED OVERRIDES, DECENTRALIZED TELEMETRY LOGGING AND PROOF-OF-HUMANITY VERIFICATION

CROSS-REFERENCE TO RELATED APPLICATIONS

This application serves as an advanced autonomous hardware embodiment of the core APE-X.ai cryptographic ecosystem. It incorporates by reference the entirety of the disclosures contained in U.S. Patent No. 12,333,564 (Issued June 17, 2025), alongside the "Ethical IP" decentralized ledger architecture, and the "Jamatcha Protocol" verification framework, adapting these digital architectures for physical kinetic governance.

1. FIELD OF THE INVENTION

The present invention relates to universal autonomous kinetic safety systems, kinetic energy management, multi-spectral hazard detection (LIDAR, Radar, Sonar, Vision), and Internet of Things (IoT) telematics. Specifically, it introduces an AI-governed electromagnetic decoupling matrix designed to instantaneously sever the rotational kinetic link between a powerplant and its propulsion or machining mechanism (marine propellers, aerospace turbofans/propellers, or automotive drivetrains) to mitigate impact damage, maintain vehicular stability, log immutable threat telemetry to a decentralized ledger.

2. BACKGROUND OF THE INVENTION

Current kinetic safety systems across MARITIME, AEROSPACE, AUTOMOTIVE, AND INDUSTRIAL sectors rely fundamentally on friction-based resistance (e.g., automotive brake pads, cutting power to the system), static mechanical linkages, or reactive destruction, or are entirely non-existent.

These legacy approaches suffer from critical flaws across multiple industries:

- **Aerospace:** Foreign Object Debris (FOD) As in a Bird strike causes catastrophic engine failure because fan blades are under maximum rotational torque upon impact, causing cascading blade shattering.
- **Automotive:** Autonomous vehicles rely on friction braking without decoupling the powerplant, which increases stopping distances and fails to instantaneously remove drivetrain torque during emergency intercepts.
- **Maritime:** Propellers lack dynamic disengagement, causing catastrophic rotational lacerations to submerged hazards or biological entities under full engine torque. Instantly cutting power at high velocity also induces severe bow-diving, leading to passenger ejection.

- **Industrial Machining:** State-of-the-art saw safety mechanisms rely on capacitive touch, requiring physical biological contact (physically cutting the operator) before triggering a pyrotechnic, destructive braking action that destroys the machinery and cannot scale to high-inertia applications.

A universal need exists to instantaneously remove rotational kinetic energy prior to impact, reducing the collision to mere translational force, thereby exponentially decreasing catastrophic damage.

3. SUMMARY OF THE INVENTION

The present invention resolves these failures via a predictive, multi-spectral sensor array coupled to an intelligent electromagnetic decoupling clutch and a hybrid power management matrix. This architecture is designed explicitly for cross-industry licensing rather than closed-ecosystem manufacturing. By severing the rotational mass of the powerplant from the propulsion/machining output in milliseconds, the technology neutralizes kinetic energy prior to impact, exponentially reducing catastrophic damage and preserving the hardware.

All decoupling events are cryptographically logged to a decentralized, cross-manufacturer safety ledger via the Jamatcha Protocol, bridging the legal "Human-in-the-Loop" liability gap.

4. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Subsystem A: The Omni-Domain Predictive Sensor Array & Threat Horizon - The vehicle or apparatus is equipped with an omni directional forward,side,back-facing multi-spectral sensor node (Sonar for water; LIDAR, Radar, and Computer Vision for road and air). The system calculates a dynamic "Predictive Threat Horizon" based on the vehicle's velocity vector.

Subsystem B: The Kinetic Decoupling Matrix - An electromagnetic decoupling clutch isolates the powerplant from the propulsion output or machining arbor. Decoupling instantly neutralizes rotational kinetic energy prior to impact, reducing complex trauma or catastrophic structural failure to simple translational deflection.

Subsystem C: Proportional Micro-Slippage & Anti-Dive Protocol - In high-velocity maritime and automotive freight applications, immediate loss of thrust causes extreme chassis destabilization. The logic controller pulses the electromagnetic clutch, generating graduated drag that safely decelerates the mass without causing violent forward and side to side pitching.

Subsystem D: Powerplant Shielding & ECU Anti-Rev Trap Synchronized with clutch disengagement; the logic controller fires a parallel microsecond signal to the Electronic Control Unit (ECU) or FADEC to instantaneously govern fuel or ignition. This instantly retards engine ignition timing or cuts the ignition spark entirely, preventing the unloaded powerplant from destructive over-revolution.

Subsystem E: The Acoustic Passenger Warning - In transit applications, upon a hazard entering a minimal two-second predictive threat horizon, the system fires a distinct, standardized high-decibel auditory pulse. This provides a universal "brace for impact" warning to human subjects prior to automated deceleration.

Subsystem F: Autonomous Re-Engagement Loop - Sensors continuously track the hazard's transit. The exact millisecond the sensor registry confirms the hazard zone is entirely clear, the logic controller smoothly matches output shaft velocity to powerplant RPM and re-engages the electromagnetic clutch, restoring full thrust autonomously.

Subsystem G: Hybrid Power-Buffer Triangulation - To ensure uninterrupted functionality of the electromagnetic clutch and multi-spectral sensors during primary machinery power failure, the system incorporates a Hybrid Power Supply Architecture. This architecture consists of a localized kinetic energy harvesting module coupled with a high-discharge capacitive storage bank.

The system parasitically harvests rotational energy during standard operation, storing it in the capacitive bank. Upon detection of a primary power loss, the system instantly switches to the capacitive bank, guaranteeing sufficient voltage to trigger and maintain the decoupled state of the electromagnetic clutch for a predetermined safety window.

Subsystem H: Gated Operational Override (GOO) - The Gated Operational Override (GOO) subsystem acts as an intelligent fail-safe and manual intervention layer governing the primary decoupling protocol. It comprises a logic gate architecture situated between the multi-spectral sensor array and the electromagnetic clutch actuation circuit. The GOO is configured to evaluate secondary contextual telemetry (e.g., mission-critical continuity requirements, human-in-the-loop manual overrides, and overriding APE-X.ai network directives) to determine if a triggered decoupling event should be bypassed or delayed. This prevents catastrophic secondary failures in scenarios where sudden torque neutralization poses a greater risk than the detected entanglement or impact.

Subsystem I: Generalized Industrial Kinetic Decoupling - (The "Cash" Protocol) In industrial machining (saws, augers, robotics, conveyors), the system casts a virtual multi-dimensional perimeter via AI computer vision. Upon detecting biological intrusion prior to physical contact, the system decouples the drive motor, neutralizing rotational torque and permitting non-destructive secondary braking.

Subsystem J: APE-X.ai & Jamatcha Telemetry Integration - Every kinetic event (decoupling or GOO bypass) is cryptographically locked as spatial telemetry. A verified human operator authenticates the event via the Jamatcha Protocol. This verified hazard data is minted to the Ethical IP global ledger, creating a decentralized, cross-manufacturer hazard mapping network available for global licensing.

Subsystem K: The Modular Retrofit Architecture - A subsystem explicitly defining a modular, "drop-in" or "bolt-on" collar variant. This defines a standalone hardware sleeve that can be installed between existing legacy engines and driveshafts.

Subsystem L: - Bypass - Adding a subsystem for a physical, catastrophic-load shear pin within the electromagnetic clutch assembly adds an ultimate fail-safe. If the electromagnetic system loses all power sources—including the hybrid buffers —the physical pin shears under sudden extreme torque, mechanically guaranteeing decoupling.

Subsystem M: Application Specific Detection Parameters -

The AI-driven multi-spectral sensor array is calibrated for domain-specific threat vectoring:

- **Aerospace (FOD Ingestion):** The sensor array utilizes high-frame-rate optical and acoustic signatures to detect Foreign Object Debris (FOD) entering a turbine intake, triggering the electromagnetic clutch to decouple the compressor shaft prior to impact.
- **Industrial (Conveyor Systems):** The sensors monitor localized belt tension and optical flow. Sudden spikes in resistance indicative of biological entanglement or mechanical jamming instantly neutralize drive-motor torque, preventing biological injury or motor burnout or further damage to the mechanical systems.
- **Maritime (Fouling Prevention):** Sonar and optical sensors are tuned to the specific acoustic reflection and visual signatures of sub-surface fishing lines, nets, and debris, initiating propeller decoupling before shaft wrapping occurs.
- **Aerospace:** Sonar and optical sensors are tuned to the specific acoustic reflection (e.g.: Bird Strikes) and when an object (a Bird) enters the danger zone the propeller is immediately disengaged reducing potential shredding of the propeller and shearing of the drive train system to a deflection event which normally enables the propeller to re-engage and continue along the flightpath with minimal to no damage or catastrophic loss the entire airplane.

Subsystem N: Agricultural & Industrial Auger Decoupling - In high-torque agricultural and waste management augers, the multi-spectral sensor array casts a volumetric safety perimeter above the intake hopper and primary flighting. Upon detecting a biological intrusion vector, the system actuates an electromagnetic clutch positioned between the primary drive motor and the reduction gearbox. By instantaneously severing the kinetic link, the system neutralizes the immense rotational pulling force. This allows the auger to instantly stall against the material load without causing mechanical burnout, preserving the hardware while eliminating the risk of traumatic biological entanglement.

Subsystem O: Autonomous & Consumer Lawnmower Deck Decoupling - For riding, push, and autonomous robotic lawnmowers, a localized array of computer vision and LIDAR sensors establishes a dynamic, 360-degree predictive virtual perimeter around the mower deck casing. Upon detecting biological mass (e.g., a human extremity or child) breaching the perimeter or entering the predictive threat horizon during a maneuver, the logic controller triggers an electromagnetic clutch decoupling the engine driveshaft from the blade spindles. This severs the rotational kinetic link ($KE_r = \frac{1}{2}I\omega^2$), permitting an integrated mechanical brake to instantaneously halt the blade's angular velocity without stalling or destroying the primary combustion or electric powerplant.

Subsystem P: High-Inertia Consumer Appliance Decoupling - In domestic and commercial high-speed centrifuge extractors (washing machines and dryers), an internal sensor matrix monitors the physical access perimeter of the rotating drum. Should unauthorized biological access occur during an active, high-RPM spin cycle, the controller fires a microsecond actuation signal to an electromagnetic clutch assembly situated between the drive motor output shaft and the basket transmission. This immediately isolates the motor's rotational inertia from the drum, preventing catastrophic traumatic injury or amputation from the high-speed rotational mechanism. The kinetic safety event generates local telemetry that can be authenticated and minted to the APE-X.ai ledger for fleet-wide safety analytics.

5. BRIEF DESCRIPTION OF THE DRAWINGS

- FIG. 1: Illustrates the Mechanical and Sensor Core, detailing the drive train split, the Electromagnetic Decoupling Clutch, and the advanced Multispectral Sonar Array generating the 'Predicted Threat Horizon'.
- FIG. 2: Isolates the APE-X.ai Decoupling Logic Controller and its data loop connecting the Vessel Dynamics Sensor Group to the ECU Interface for anti-rev and anti-dive proportional micro-slippage.
- FIG. 3: Illustrates the Integrated System Architecture block diagram, mapping the Core AI Decision Matrix flow to the Audible Alarm, ECU Governor, Clutch Controller, Autonomous Re-Engagement Loop, and the Cryptographic Telemetry Ledger Link.
- FIG. 4: Details Comprehensive System Activation Scenarios, contrasting Low Velocity/High Proximal Risk (instantaneous disengagement), High Velocity/Multi-Hazard Management (proportional micro-slippage and siren activation), and Low Visibility/Environmental Sensing intercepts.

Video Descriptions for Section 5

- **VIDEO 1:** A digital video visualization detailing the maritime fouling prevention embodiment of the Omni-Domain Autonomous Kinetic Decoupling Protocol. The sequence transitions from an exterior underwater view of a marine outboard propeller approaching a sub-surface net hazard to a detailed 3D cross-sectional cutaway of the lower gearcase. The cutaway explicitly illustrates the internal mechanical architecture, including the vertical drive shaft, bevel gears, and the horizontal propeller shaft. The visualization demonstrates the spring-loaded electromagnetic clutch mechanism situated on the horizontal shaft, actuating to physically sever the rotational kinetic link during a rope entanglement event to prevent structural failure.
- **VIDEO 2:** A digital video visualization illustrating the generalized industrial kinetic decoupling system (the "Cash Protocol") integrated into a high-inertia manufacturing conveyor architecture. The sequence

depicts a foreign object hazard (a metal wrench) traveling along the conveyor belt and entering a critical mechanical pinch point at the primary drive gear. The visual isolates the external electromechanical drive assembly, detailing the specific position and actuation of the electromagnetic clutch situated on the primary drive shaft between the electric motor and the conveyor gear, demonstrating the instantaneous neutralization of motor torque during a catastrophic mechanical jam.

6. CLAIMS

Claim 1: An omni-domain autonomous kinetic decoupling system, comprising: a multi-spectral sensor array configured to detect anomalous environmental data corresponding to an imminent collision, entanglement, or mechanical failure; an electromagnetic clutch coupled between a rotational drive source and a driven element, said clutch configured to neutralize rotational torque upon receiving an actuation signal; and a gated operational override module communicatively coupled between said sensor array and said electromagnetic clutch, wherein said override module is configured to intercept the actuation signal and execute a logic protocol to either permit, delay, or block said actuation signal based upon secondary contextual telemetry and manual override inputs.

Claim 2: The system of claim 1, further comprising a hybrid power delivery subsystem configured to supply electrical power to said electromagnetic clutch independently of a primary power source, said hybrid power delivery subsystem comprising a kinetic energy harvester and a high-discharge capacitive storage bank.

Claim 3: The system of claim 1, wherein said secondary contextual telemetry is transmitted and logged via a distributed ledger network utilizing a proprietary Jamatcha protocol to ensure immutable record-keeping of override events and operational statuses.

Claim 4: The system of claim 1, wherein said multi-spectral sensor array is configured for aerospace applications, utilizing optical and acoustic sensors calibrated to detect foreign object debris (FOD) ingestion, and wherein said electromagnetic clutch is configured to decouple a turbine compressor shaft.

Claim 5: The system of claim 1, wherein said multi-spectral sensor array is configured for industrial applications, utilizing tension and optical flow sensors calibrated to detect localized conveyor belt jamming or biological entanglement.

Claim 6: The system of claim 1, wherein said multi-spectral sensor array is configured for maritime applications, utilizing sonar and optical sensors calibrated to detect subsurface nets and fishing lines to prevent propeller shaft fouling and to detect human, fish, animal biological (tree stumps, rocks) intrusions into the danger zone both at the surface and below the surface of the waterway.

Claim 7: The system of Claim 1, further comprising a proportional micro-slippage matrix executed by a logic controller during high-velocity intercepts to maintain dynamic vehicular hull or chassis stability.

Claim 8: A method for operating an autonomous kinetic decoupling system, comprising the steps of triangulating operational power from regenerative induction, battery storage, and solar harvesting; monitoring a predictive threat horizon; and selectively overriding the autonomous decoupling via a Gated Operational Override (GOO) Module to maintain mission-critical thrust, wherein said override is cryptographically recorded.

Claim 9: The method of Claim 8, wherein the system is integrated into an industrial machining apparatus, utilizing predictive vision to decouple a drive motor from a cutting implement upon biological intrusion prior to physical contact, enabling non-destructive braking.

Claim 10: A decentralized hazard verification network architecture wherein a localized kinetic safety event, comprising the autonomous actuation of an electromagnetic decoupling clutch, generates cryptographic spatial telemetry; said telemetry being authenticated via a localized human-in-the-loop verification protocol prior to being minted to a globally accessible, cross-manufacturer safety ledger.

Claim 11: The system of Claim 1, wherein the vehicle is an automobile or heavy freight truck, and the electromagnetic clutch isolates the drivetrain from the wheel axles to eliminate engine rotational inertia during emergency braking intercepts.

Claim 12: The system of Claim 1, further comprising a parallel electronic control unit (ECU) governor configured to instantaneously govern fuel or ignition synchronized with the clutch disengagement, preventing catastrophic powerplant over-revolution.

Claim 13: A marine propulsion safety system comprising: a multi-spectral sensor array configured to generate a predictive threat horizon; an electromagnetic clutch separating a combustion engine drive shaft from a propeller shaft; and a centralized logic controller configured to execute instantaneous clutch disengagement at low vessel velocities and proportional clutch micro-slippage at high vessel velocities upon hazard detection to maintain dynamic hull stability and to ward off a potential imminent collision event.

Claim 14: The system of Claim 1, further comprising an acoustic warning emitter configured to trigger a distinct auditory alarm sequence precisely two seconds prior to the automated execution of clutch disengagement or micro-slippage.

Claim 15: The system of Claim 1, wherein the sensor array continuously tracks the passing hazard and autonomously re-engages the electromagnetic clutch to restore full propulsion upon verifying the surrounding perimeter is clear.

Claim 16 (The Retrofit/Licensing Claim): A claim explicitly covering the safety system as a self-contained, modular retrofit kit. Securing the architecture as an aftermarket add-on strongly supports a business plan focused purely on executing direct licensing agreements with legacy equipment manufacturers and third-party safety vendors.

Claim 17 (Agricultural PTO Application): A system claim adapting the methods of Claim 9 specifically for agricultural Power Take-Off (PTO) shafts and implements, utilizing the predictive perimeter to decouple the tractor powerplant from the implement prior to entanglement.

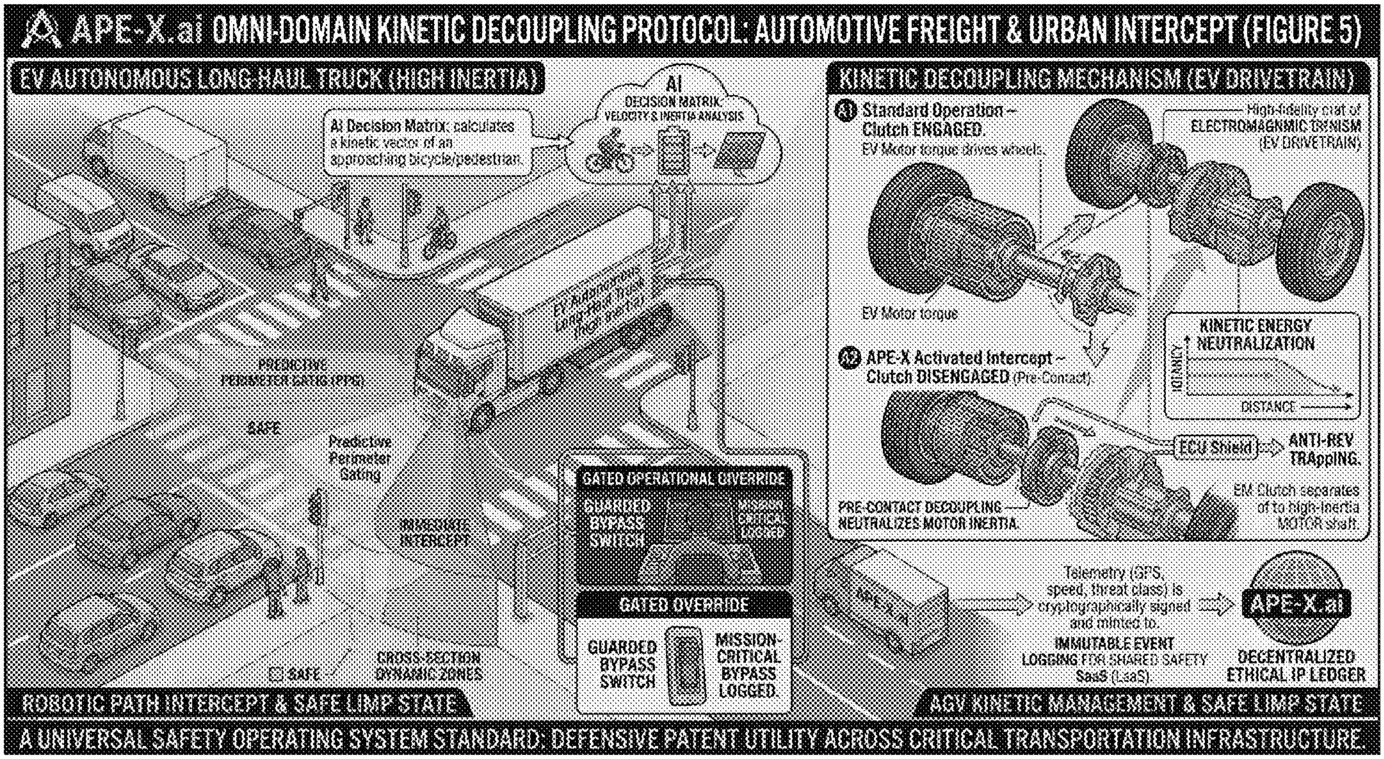
Claim 18 (UAV/Drone Rotor Decoupling): A claim extending the aerospace application in Claim 4 to unmanned aerial vehicles, wherein the system detects biological proximity and decouples the electric motors from the rotor blades to eliminate rotational laceration risks during urban operation.

Claim 19: The system of Claim 1, wherein the rotational power delivery system is a consumer DIY, an agricultural or industrial auger or related drilling mechanism, and wherein the electromagnetic clutch is configured to isolate a primary drive motor from a reduction gearbox upon the sensor array detecting biological mass approaching the auger/drill flighting, neutralizing rotational torque and preventing biological entanglement.

Claim 20: The system of Claim 1, wherein the rotational power delivery system is a lawnmower/lawn maintenance apparatus, and wherein the sensor array establishes a predictive virtual perimeter around a mower/cutting deck, executing localized clutch disengagement to isolate a primary powerplant from a cutting blade spindle upon biological detection prior to physical contact, enabling instantaneous non-destructive braking of said cutting blade.

Claim 21: The system of Claim 1, wherein the rotational power delivery system is a domestic or commercial appliance comprising a high-speed rotational drum, and wherein the multi-spectral sensor array is configured to detect biological intrusion into an active spin cycle, triggering the electromagnetic clutch to instantaneously sever rotational kinetic energy transmission from the drive motor to the drum transmission to prevent bodily injury.

Figures and Images:



The "Cash Protocol" (The Predictive Kinetic Decoupling Matrix) doesn't just apply to saws; it is a universal safety architecture for any industrial environment where humans and high-inertia machinery coexist.

This provisional seeks to cover the full spectrum of industrial hazards, effectively turning "Death by Machinery" into "Stopped by Decoupling."

The Industrial "Cash Protocol" Expansion

1. Conveyor Belt & Roller Systems (Mining & Manufacturing)

The Hazard: Workers are frequently pulled into pinch points where belts and rollers meet.

The Solution: Instead of relying on a physical emergency stop cable (which is often out of reach), the sensor array establishes a "Volume-of-Interest" (VOI) around the pinch point.

Any biological intrusion triggers the electromagnetic clutch to instantly decouple the drive motor from the roller assembly, stopping the movement in milliseconds—far faster than a physical brake could halt the inertia of a loaded belt.

2. Industrial Mixers, Blenders, & Compacting Augers (Food Processing & Waste Management)

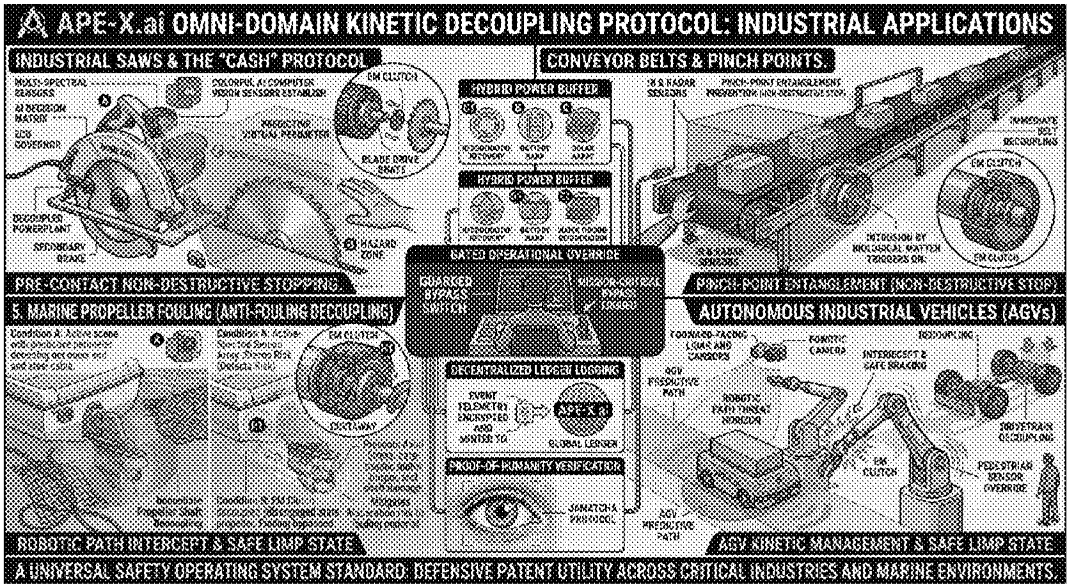
The Hazard: High-torque vertical or horizontal augers used in mixing or waste compaction.

The Solution: The sensor array detects the "signature" of a human limb approaching the hopper. The system decouple the auger from the main gearbox instantly. Because you are decoupling the rotational mass of the entire gearbox and motor assembly, the auger loses its "pull" force immediately.

3. Robotic Arm & Assembly Line Intercepts

The Hazard: High-speed robotic arms used in automotive manufacturing can strike a worker with blunt force or trap them in a press.

The Solution: The sensor array monitors the robot's kinetic path. If a human enters the robot's "Action Radius," the decoupling matrix severs the motor's power, immediately allowing the arm to go "limp" or enter a safe, controlled-braking state. This prevents the robot from finishing its programmed move once an intrusion is detected.



The Competitive Takedown: This Invention vs. SawStop

How SawStop Works (Reactive & Destructive): It uses capacitive touch. It runs a small electrical current through the blade. When human skin *physically touches* the teeth, it changes the electrical signal. This fires an explosive pyrotechnic cartridge that slams a solid block of aluminum into the spinning blade.

The Flaw: It requires the user to actually get cut (even slightly) before it triggers. Furthermore, it completely destroys the saw blade and the brake cartridge. Every save costs the user $150+ in destroyed parts.

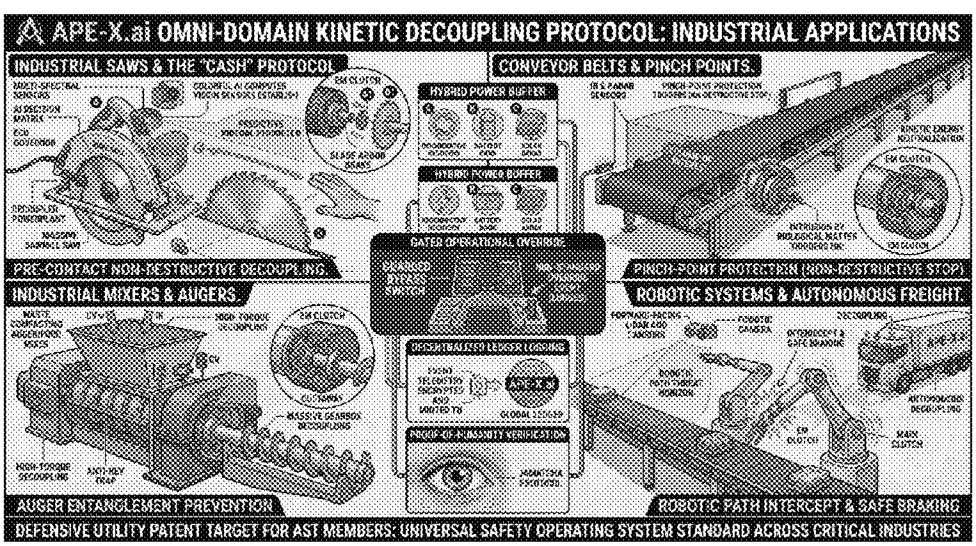
The Scale Limit: SawStop cannot scale up to giant industrial mill saws. If you drop an aluminum block into a 6-foot sawmill blade spinning at 2,000 RPM, the kinetic energy ($KE_r = \frac{1}{2}I\omega^2$) will literally rip the entire machine off its concrete mounts and send shrapnel everywhere.

How the "Cash Protocol" Transcends It (Predictive & Non-Destructive):

Predictive Vision: Instead of waiting for flesh to touch metal, the localized AI/Computer Vision sensor array establishes a virtual 3D perimeter around the blade. It tracks the operator's hands and other body parts. If a body part breaches the red zone at an unsafe velocity, the system fires.

Non-Destructive Decoupling: Instead of blowing up the machine, the Electromagnetic Clutch instantaneously severs the drive motor from the blade arbor. The massive rotational torque of the motor is removed, allowing a standard electronic or mechanical brake to safely halt the blade without destroying it. Resetting the saw just requires flipping a switch to re-engage the clutch.

Infinite Scaling: Because the system *decouples* rather than *crashing*, this works on a 7-inch home skill saw, and it scales perfectly to a massive industrial timber mill.



Scale Up: The environment remains (the Sandy Lake-Bed at 'C'), but the asset is now visualized as a Global Node. We see connections to regional hubs (Vancouver, Seattle) and other synchronized APE-X vessels, showing this is a platform-agnostic, global standard available for Global Decentralized Licensing.

This presentation bridges the physical marine safety asset with the digital IP and verified engagement ledger, making it a powerful and unified argument for global licensing and ethical IP protection.

The entire view act acts an official asset registration within the Ethical IP Ledger (Ancestral Tracking & Creator Compensation). The new title explicitly references the governing authority: USPTO #12,333,564.

FunAdClic/Ecosystem Logic (The Jamatcha Protocol): Looking next to the Ape-X.ai Decoupling Logic Controller (40). It introduces a holographic schematic insert that details the JAMATCHA INTERACTIVE VERIFICATION PROTOCOL (Proof-of-Humanity Layer). This establishes that the "Verified Safety Event" (16) is only triggered when the APE-X.ai Controller confirms human engagement via the gamified verification protocol, creating a proprietary layer of network security.

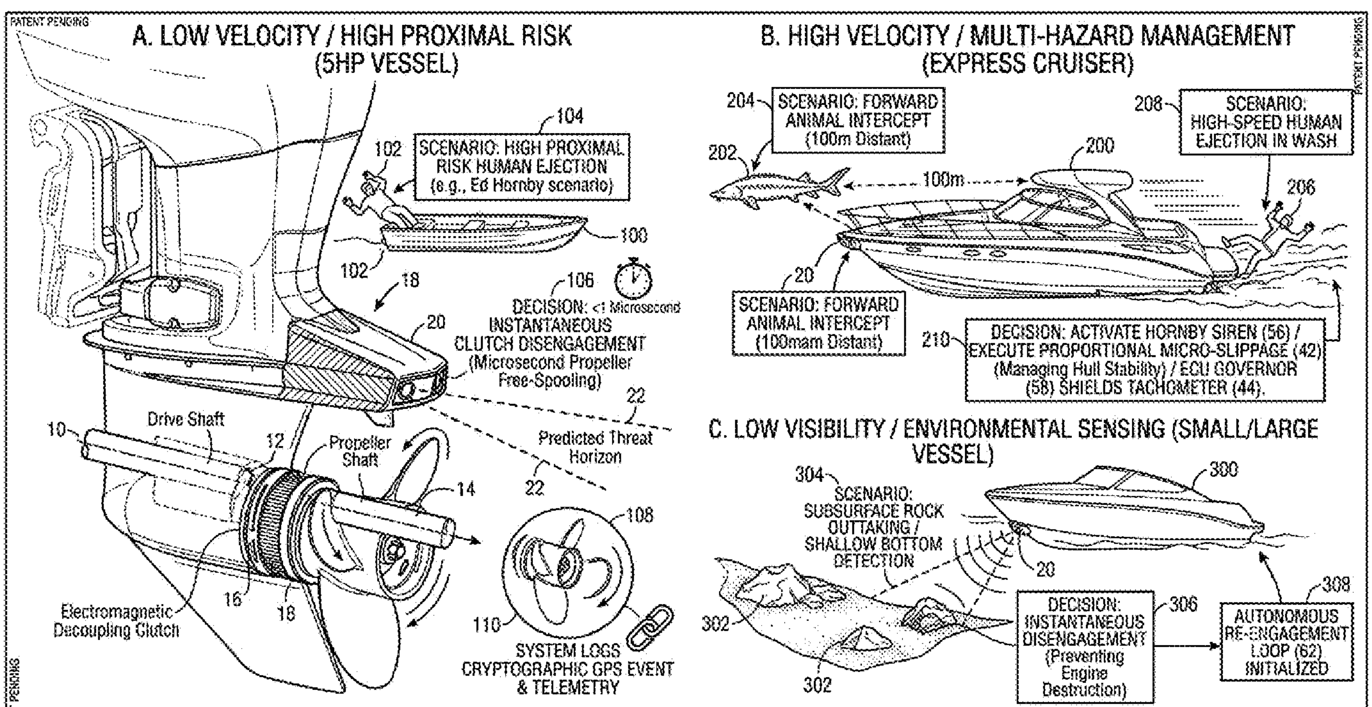


FIG. 4: COMPREHENTIVE SYSTEM ACTIVATION SCENARIOS AND DECISION LOGIC

This comprehensive illustration, "FIG. 4: REPRESENTATIVE SYSTEM ACTIVATION SCENARIOS AND DECISION LOGIC," breaks down the system responses by velocity and risk type, fully referencing the technical components established in our prior discussions:

A. LOW VELOCITY / HIGH PROXIMAL RISK (5HP VESSEL)

This explicitly visualizes the Ed Hornby scenario. A person is shown falling backward off the stern of a small aluminum boat, directly into the imminent danger zone of the propeller.

The callout (106) connects this proximal fall directly to the core decision: Instantaneous Clutch Disengagement, allowing the propeller to free-spool within a microsecond before contact. It also confirms that the event is logged (110) on the Cryptographic Ledger Link.

B. HIGH VELOCITY / MULTI-HAZARD MANAGEMENT (EXPRESS CRUISER)

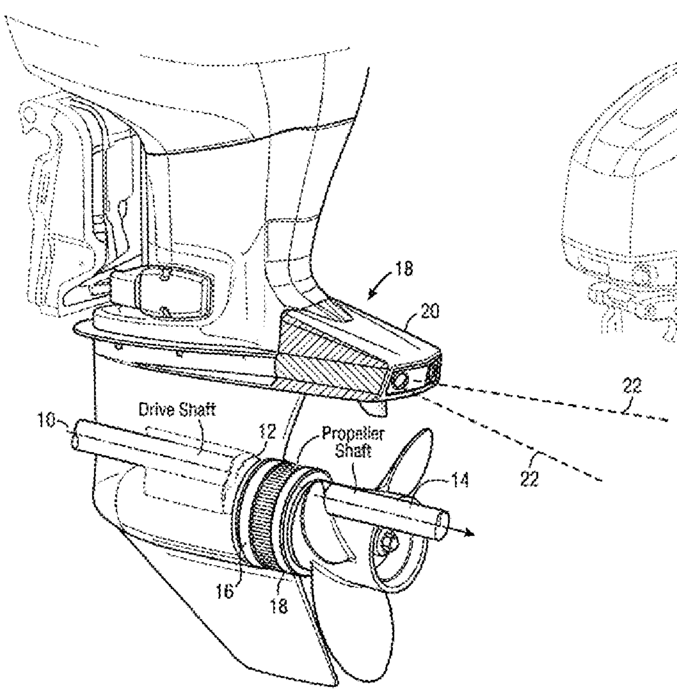
This tackles high-speed complexity. At the bow (100m distant), an animal is detected entering the trajectory, with the 'Predicted Threat Horizon' (22) from FIG. 1 visualized extending to the intercept. Simultaneously, at the stern, a human subject has been ejected and is caught in the prop wash.

The callout (210) explicitly states how the system manages this dual threat: activating the standardized Hornby Siren (56) and executing Proportional Micro-Slippage (42) to manage hull stability (preventing a bow-dive) and shielding the engine tachometer.

C. LOW VISIBILITY / ENVIRONMENTAL SENSING (SMALL/LARGE VESSEL)

This covers passive environmental threats defined: subsurface rock outcroppings and a shallow, sandy bottom.

The callout (306) links this detection to the core Instantaneous Disengagement logic, preventing the massive mechanical destruction caused by a hard striking. This panel also visualizes the Autonomous Re-Engagement Loop (62) initialized after detection shown in Figure 3 following:



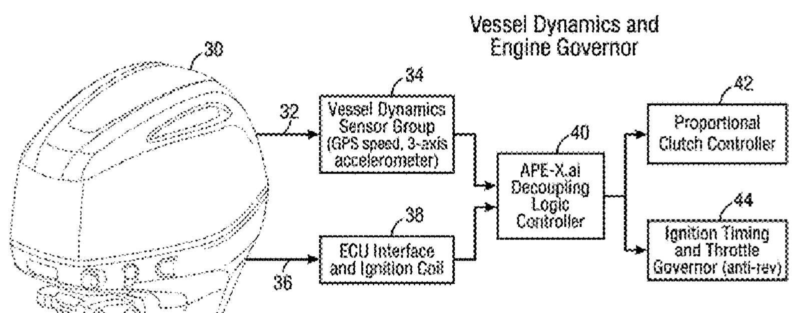


FIG. 3

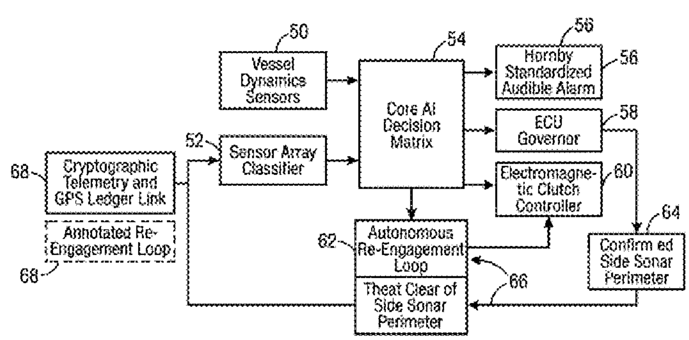


FIG. 1

FIG. 3

FIG. 1 (Top-Left) details the mechanical drive train split, the Electromagnetic Decoupling Clutch (16), and the advanced Multispectral Sonar Array (20) on the lower unit.

The Mechanical and Sensor Core (The Drive Train Split)

This image is the foundation of the physical architecture. It details the Vessel-Kinetic-Aware Outboard Unit, ghosting the lower unit to expose the central mechanism.

The essential mechanical change is shown at the central junction: the 'Drive Shaft' and the 'Propeller Shaft' are separated, linked only by the core innovation: the Electromagnetic Decoupling Clutch.

Also visualized is the advanced detection system, integrating the leading-edge Multispectral Sonar and Computer Vision Sensor Array. Note the conceptual visualization of the 'Predicted Threat Horizon' projection—this is the visualization of the predictive 2-second buffer.

FIG. 2 (Top-Right) isolates the APE-X.ai Decoupling Logic Controller (40), demonstrating the essential link to the ECU Interface (38) that executes the 'anti-rev shield' and managing the speed-aware 'anti-dive' proportional micro-slippage (42).

The Dynamics & Anti-Rev Subsystem (The Interior Brain)

This schematic zooms strictly on the high-speed safety protocols isolated within the engine cowling. It details the 'Anti-Dive' and 'Tachometer Shield' logic.

Also visualized is the APE-X.ai Decoupling Logic Controller, which simultaneously processes real-time data from the 'Vessel Dynamics Sensor Group' (Speed, Acceleration) and the 'ECU Engine Data Link' (RPM).

Crucially, the schematic demonstrates how the controller bifurcates its decisions, driving the Proportional Clutch Controller (executing *Instantaneous* vs. *Proportional Micro-Slippage* based on speed) while *simultaneously* commanding the Ignition Timing and Throttle Governor (the ECU anti-rev trap).

FIG. 3 The Integrated System Architecture (The Full Interaction Loop)

(Bottom) illustrates the entire closed-loop System Integration, explicitly showing how the 'Core AI Decision Matrix' (54) manages the parallel sequence: triggering the distinctive Hornby Siren (56), the ECU Governor, and the Clutch Controller. It also features the final parameter: the Autonomous Re-Engagement Loop (62).

This is the complete system-wide block diagram, connecting the components from FIGS 1 and 2 into a closed loop. This visualization is what defends the system against "public disclosure" arguments.

This diagram illustrates the flow from the initial 'APE-X.ai Classifier' (categorizing the hazard) through the decision matrix to the three parallel actions prioritized: triggering the distinct Audible Alarm (The 'Hornby Siren'), activating the ECU Governor, and executing the Clutch Controller.

Most importantly, this maps the final parameter: the Autonomous Re-Engagement Loop. This schematic confirms that the system maintains vigilance, autonomously re-engaging thrust *only* after confirming the hazard is entirely clear of the “Omni-directional Sonar Perimeter”.

This innovation anchors the core APE-X ecosystem logic by including the block for the 'Cryptographic Telemetry and GPS Ledger Link', logging every impact event onto the decentralized ledger.

This is not just a clutch; it is a complete hull and engine kinetic stability protocol.