REMARKS

I. Summary of Office Action

Currently claims 1-20 (20 claims) are pending in the application.

The Office Action dated April 14, 2026 contains the following rejections:

(1) Claims 1, 2, 4, 14, and 18 are rejected under 35 U.S.C. § 102(a)(1) and (a)(2) as allegedly anticipated by Zafar (US 20190265082 A1);

(2) Claims 3 and 17 are rejected under 35 U.S.C. § 103 as allegedly unpatentable over Zafar in view of Ko (US 20170237908 A1);

(3) Claims 5, 6, 10, 11, 15, 19, and 20 are rejected under 35 U.S.C. § 103 as allegedly unpatentable over Zafar in view of Woodworth (US 20230406499 A1); and

(4) Claim 16 is rejected under 35 U.S.C. § 103 as allegedly unpatentable over Zafar in view of Bolden (WO 2016069168 A1).

Claims 7–9 and 12–13 are objected to as dependent upon a rejected base claim but would be allowable if rewritten in independent form.

II. Claim Amendments

Allowable claim 7 has been rewritten in independent form as new claim 21. New claim 22 has the same limitations as canceled claim 8. New claim 22 has the same limitations as canceled claim 9.

Allowable claim 12 has been rewritten in independent form as new claim 24. New claim 25 has the same limitations as canceled claim 13.

Claims 7-9, and 12-13 have been canceled.

No new matter has been added.

III. Amendments To Independent Claims

Applicant has further amended the independent claims 1 and 14 to describe aspects of the connection interface as follows:

one or more drop pods, wherein each of the one or more drop pods comprise:

a top side and a bottom side;

a connection interface for an aircraft positioned on the top side, the connection interface comprising one or more magnetically-responsive engagement elements positioned on an exterior of each of the one or more drop pods and configured to releasably couple to a complementary electromagnetic unit disposed on a bottom portion of the aircraft, wherein the connection interface is configured to be retained against the bottom portion of the aircraft during flight while the electromagnetic grasping unit is energized, and to release from the aircraft when the electromagnetic unit is de-energized;

Support for the amendment may be found throughout the specification, and particularly described in paragraphs [0100-0102] and depicted in FIGS. 6A-6C reproduced below. No new matter has been added.

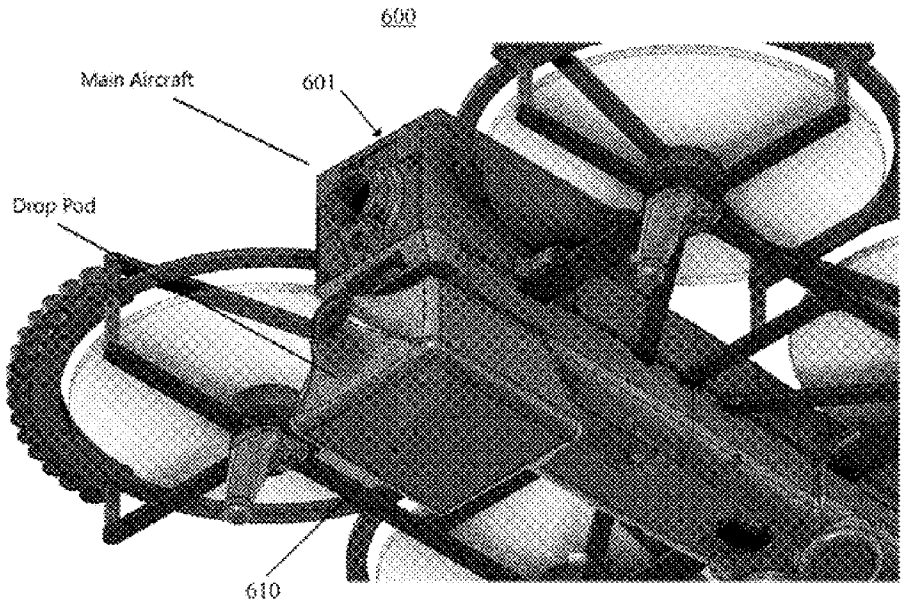

600
Main Aircraft
601
Drop Pod
610

FIG. 6A

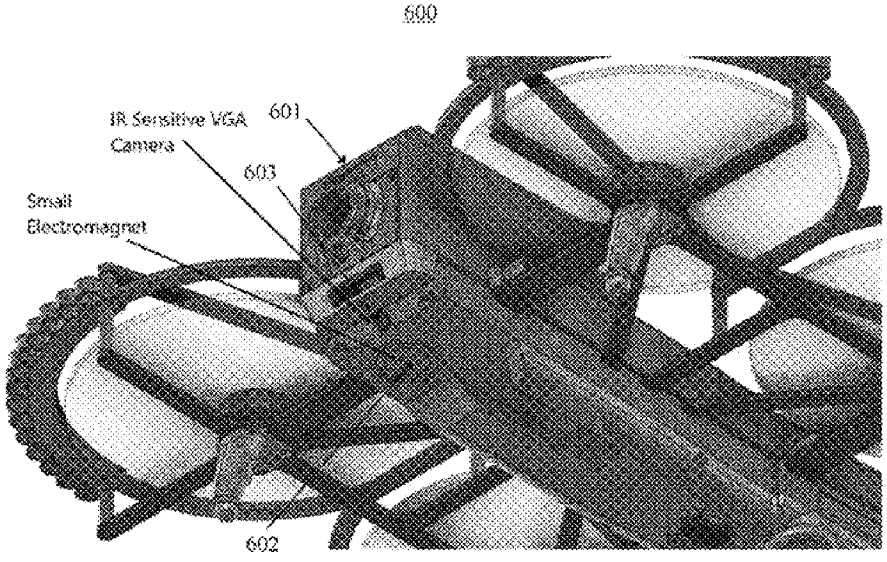

600
IR Sensitive VGA Camera
601
603
Small Electromagnet
602

FIG. 6B

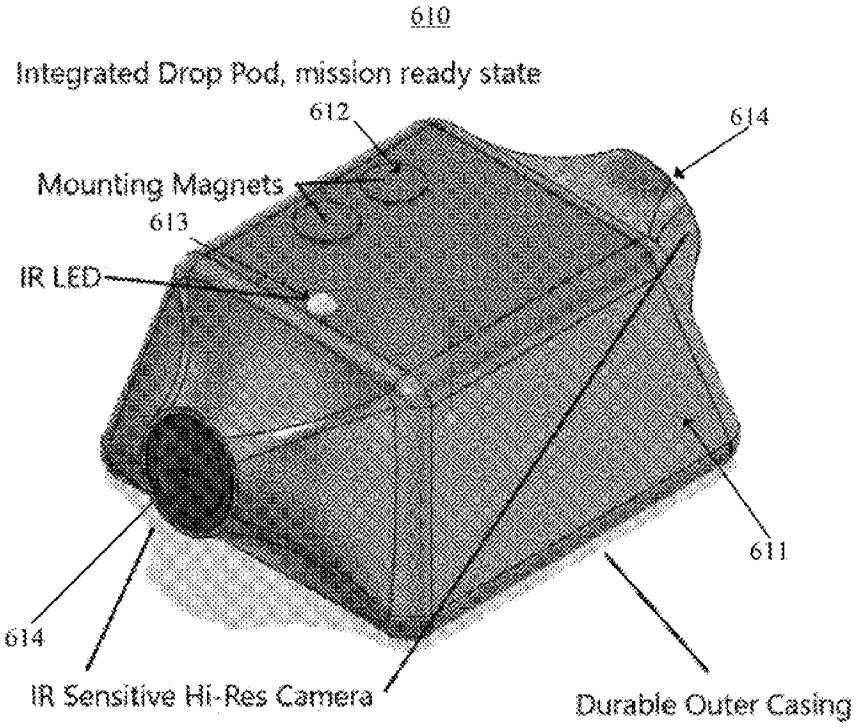


FIG. 6C

Claims 1 and 14 have been amended to recite, among other features, that each drop pod includes a top side and a bottom side, and a connection interface for an aircraft positioned on the top side. The connection interface comprises one or more magnetically-responsive engagement elements positioned on an exterior of each of the one or more drop pods and configured to releasably couple to a complementary electromagnetic unit disposed on a bottom portion of the aircraft. The connection interface is further configured to be retained against the bottom portion of the aircraft during flight while the electromagnetic unit is energized, and to release from the aircraft when the electromagnetic unit is de-energized. Support for these amendments can be found at least in FIGS. 2B, 2C, 6A, 6B, and 6C of the application as filed, and at least in paragraphs describing drop pod bay module 226, bay attachment module 246, pod attachment mechanism 602, and mounting magnets 612. No new matter has been added.

Reconsideration and allowance of the claims as amended is respectfully requested. Applicant submits that the claims as amended are patentable over US Publication No. 2019/0265082 A1 to Zafar et al. ("Zafar"), for at least the following reasons.

Summary of the Cited Reference

Zafar describes a remote monitoring system for stored grain. Zafar's system uses sensor units placed in or near a grain storage environment (such as a silo) to detect environmental variables including temperature, humidity, carbon dioxide, oxygen, phosphine, and ethylene. Sensor data is communicated from the sensor units to a gateway over a local wireless mesh network, and from the gateway to a cloud computing system over a long-range network. Machine-learning trained algorithms applied at the cloud computing system generate predictive analytics, including a Grain Storage Quality Index (GSQI) score.

In certain embodiments, Zafar describes a sensor pod housed in a three-dimensional round enclosure, such as a spherical or elongated ellipsoidal shell. The enclosure is designed to be rolled, thrown, or dropped into a grain storage environment and to be retrieved at the end of the storage cycle, for example by being drawn out through the silo's vacuum unloading system. Zafar discloses several optional retrieval aids, including a cord or string reversibly attached to a hook or ring on the bottom part of the enclosure, internal electromagnets configured to roll the pod along a metallic surface, and a generic suggestion that "delivery and/or retrieval of the enclosed sensor unit 700 is achieved using drones," in connection with which Zafar mentions that the pod "may further comprise further modification (e.g., one or more handles, divots, openings, grooves, etc.) to facilitate the handling of the enclosed sensor unit 700 by the drone."

The Amended Claims Distinguish Over Zafar

Applicant respectfully submits that Zafar does not disclose, teach, or suggest the connection interface as recited in amended claims 1 and 14. Several independent reasons support this position.

A. Zafar does not disclose a magnetically-responsive engagement element positioned on the exterior of the pod for coupling to an aircraft.

The amended claim requires that each drop pod include one or more magnetically-responsive engagement elements positioned on an exterior of the drop pod. The engagement elements must be configured to releasably couple to a complementary electromagnetic unit disposed on a bottom portion of an aircraft. Zafar does not disclose any such structure.

The only exterior engagement features that Zafar describes on its sensor pod are passive mechanical features: hooks 809 on the bottom of the enclosure for attaching a string or cord, and generic "handles, divots, openings, grooves" that might assist drone handling. None of these is magnetically responsive. Zafar's hooks and grooves do not couple by magnetic attraction to any complementary structure on a carrier vehicle. Rather, Zafar's hooks are described as anchor points for a cord operated by a human user, and Zafar's "handles, divots, openings, grooves" are described in the abstract without specifying any mating component on the drone side.

Zafar's only mention of electromagnets is in a wholly different context. Zafar describes internal electromagnets housed within the pod itself, energized in **sequence to roll the pod** along a metal floor: *"retrieval can be achieved using electromagnets that are energized and de-energized in sequence such that the ball rolls itself along a metal surface."* These

internal electromagnets act between the pod and the environment, not between the pod and a carrier aircraft. They are not positioned on an exterior of the pod, they are not configured to couple to any aircraft, and they do not perform any in-flight retention function. They are simply a locomotion mechanism for ground-rolling retrieval.

Accordingly, Zafar does not disclose any magnetically-responsive engagement element on the exterior of the pod configured to couple to an aircraft. This limitation alone distinguishes amended claim 1 over Zafar.

B. Zafar does not disclose a complementary electromagnetic unit disposed on a bottom portion of the aircraft.

The amended claim requires that the connection interface releasably couple to a complementary electromagnetic unit disposed on a bottom portion of the aircraft. This requires a paired, mating relationship between exterior pod hardware and a specifically located aircraft-side gripping component.

Zafar discloses no such pairing. Where Zafar mentions drones at all, it does so in a single conclusory sentence — "delivery and/or retrieval of the enclosed sensor unit 700 is achieved using drones" — without identifying any structure on the drone that engages the pod, without describing where on the drone such a structure would be located, and without disclosing any electromagnetic component on the drone. Zafar provides no teaching of an electromagnetic grasping unit on a drone, much less one disposed on a bottom portion of a drone and configured to mate with a complementary element on the pod.

A reference cannot be said to disclose a structural pairing when it discloses neither half of the pair. Zafar's casual mention of drone handling, untethered to any specific

mechanism, is insufficient to anticipate or render obvious the bilateral, electromagnetically-mediated mating structure recited in the amended claim.

C. Zafar does not disclose energization-conditioned retention during flight.

The amended claim requires that the connection interface be configured to be retained against the bottom portion of the aircraft during flight while the electromagnetic unit is energized, and to release from the aircraft when the electromagnetic unit is de-energized. This recites an active, electrically commanded retention scheme in which the holding force is generated by, and modulated by, energization of an electromagnetic component.

Zafar discloses nothing of the sort. Zafar's hook-and-string arrangement is purely mechanical and passive: the hook holds whatever is tied to it, and there is no electrical signal, energization state, or commanded release. Zafar's vacuum retrieval mode uses the silo's air-handling system, not an electromagnet, and operates without any electrical retention signal. Zafar's internal sequencing-electromagnet embodiment, as noted above, operates against a metal floor and is unrelated to retention against an aircraft.

Because Zafar nowhere ties retention of the pod to the energized/de-energized state of an electromagnetic unit, Zafar cannot teach or suggest the energization-conditioned in-flight retention scheme recited in amended claim 1.

D. Zafar does not disclose a connection interface positioned on the top side of the pod.

The amended claim requires that the connection interface be positioned on the top side of the drop pod. Zafar uniformly places its handling features — its hooks 809 — on the bottom part of the enclosure. The remaining handling features that Zafar mentions in passing ("handles, divots, openings, grooves") are not assigned to any particular side of the

enclosure, and Zafar gives no indication that any of them are arranged for engagement from above by an overhead carrier.

The top-side placement is not arbitrary in the present application. As shown in FIGS. 6A and 6B, top-side placement of the engagement element is what permits the pod to hang from a hovering aircraft via a bottom-mounted electromagnetic gripper. Zafar, which is concerned with pods that are dropped into and retrieved from grain piles, has no analogous configuration and no reason to relocate its hooks to the top side.

E. The combination of features is materially different from Zafar's place-and-retrieve architecture.

Even apart from the limitation-by-limitation analysis above, the combination of features in amended claim 1 reflects a materially different design philosophy from anything Zafar discloses. Zafar's pods are designed to be placed once, left in the storage environment for an extended period (often a season), and recovered at the end of that period by gravity, vacuum, or hand. The connection interface in amended claim 1, by contrast, is designed for active aircraft handling — the pod is held against the aircraft during powered flight by an energized electromagnet and released on command when the aircraft selects an appropriate deployment location. Zafar's hook-and-string, vacuum-retrieval, and ground-rolling embodiments are inapposite to this use case and do not, individually or collectively, teach or suggest the claimed structure.

Summary

For at least the reasons set forth above, Zafar fails to disclose, teach, or suggest at least the following limitations of amended claim 1 and 14:

- one or more magnetically-responsive engagement elements positioned on an exterior of each drop pod,
- the engagement elements being configured to releasably couple to a complementary electromagnetic unit disposed on a bottom portion of an aircraft,
- the connection interface being configured to be retained against the bottom portion of the aircraft during flight while the electromagnetic unit is energized and to release when the electromagnetic unit is de-energized, and
- the connection interface being positioned on the top side of the drop pod.

The remaining claims depend from claim 1 or 14 and are patentable for at least the same reasons, as well as for the additional features recited therein.

In view of the foregoing, Applicant respectfully submits that the pending claims are in condition for allowance. Favorable reconsideration and prompt allowance of all pending claims are respectfully requested. Should the Examiner have any remaining questions or concerns that may be resolved through a telephonic interview, the Examiner is invited to contact the undersigned at the telephone number listed below.

IV. Conclusion

None of the cited references, either alone or in combination, teach all of the limitations of the amended claims.

Accordingly, Applicant respectfully request that the rejection of 1, 2, 4, 14, and 18 under 35 U.S.C. § 102 be withdrawn.

Accordingly, Applicant respectfully request that the rejection of 3, 5, 6, 10, 11, 15, 16, 17, 19, and 20 under 35 U.S.C. § 103 be withdrawn.

For the foregoing reasons, Applicant respectfully requests withdrawal of the rejections. The Applicant believes that all pending claims are in condition for allowance and respectfully requests reconsideration and favorable action on this Application. Applicant requests reconsideration. In order to efficiently prosecute this Application, the Applicant has presented only a selection of arguments regarding the pending claims. The fact that Applicant has chosen not to raise any particular argument at this time should not be deemed a waiver or an acquiescence to any position. Applicant reserves his right to raise arguments at a later date in order to maintain efficient prosecution. Any extensions of time necessary to response to the Office Action are requested herewith.

Respectfully submitted,
/Edward Steakley/
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