REMARKS/ARGUMENTS

Upon entry of the present amendment, claims 1-5, 8-14, and 17-20 will be pending in this application. Claims 1, 11, and 20 have been amended, claims 6-7 and 15-16 have been canceled, and no new claims have been added. No new matter is added. Based on the following remarks, Applicant respectfully requests reconsideration and allowance of the pending claims.

Office Action Summary

Claim 11 is objected to for formalities.

Claims 1-20 are rejected under 35 U.S.C. §101 because the claimed invention is directed to an abstract idea without significantly more.

Claims 1-2, 4-5, 8, 11-12, 14, 17, and 19 are rejected under 35 U.S.C. §103 as being unpatentable over Kamon et al. (U.S. Publication No. 2022/0220709) (hereinafter, "*Kamon*") in view of Yamada et al. (U.S. Publication No. 2017/0314987) (hereinafter, "*Yamada*").

Claims 3 and 13 are rejected under 35 U.S.C. §103 as being unpatentable over *Kamon* in view of *Yamada* and in further view of Kowalchuk (U.S. Publication No. 2014/0196919) (hereinafter, "*Kowalchuk*").

Claims 6-7 and 15-16 are rejected under 35 U.S.C. §103 as being unpatentable over *Kamon* in view of *Yamada* and in further view of Hamada et al. (U.S. Publication No. 2021/0292999) (hereinafter, "*Hamada*").

Claims 9 and 18 are rejected under 35 U.S.C. §103 as being unpatentable over *Kamon* in view of *Yamada* and in further view of Hurd et al. (U.S. Publication No. 2020/0326715) (hereinafter, "*Hurd*").

Claim 10 is rejected under 35 U.S.C. §103 as being unpatentable over *Kamon* in view of *Yamada* and in further view of Cohen et al. (U.S. Publication No. 2021/0025143) (hereinafter, "*Cohen*").

Claim 20 is rejected under 35 U.S.C. §103 as being unpatentable over *Kamon* in view of *Hamada*.

Rejections Under 35 U.S.C. § 101

Without conceding the correctness of the rejection, and solely in the interest of expediting prosecution, Applicant has amended independent claims 1, 11, and 20 to include additional features that further direct the claim away from ineligible subject matter. As such, Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 101.

Rejections Under 35 U.S.C. § 103

Brief review of *Kamon*

FIG. 1 of *Kamon*, which is reproduced below, shows a "construction machinery 1000 with learning function ... provided with a working part 104, an operating part 103, a manipulating part 101, a work-state detecting part 112, an operation-state detecting part 113, a reaction detecting part 114, a learning data memory 115, a learning module 118, and a hydraulic drive system 105" (*Kamon* at [0079]).
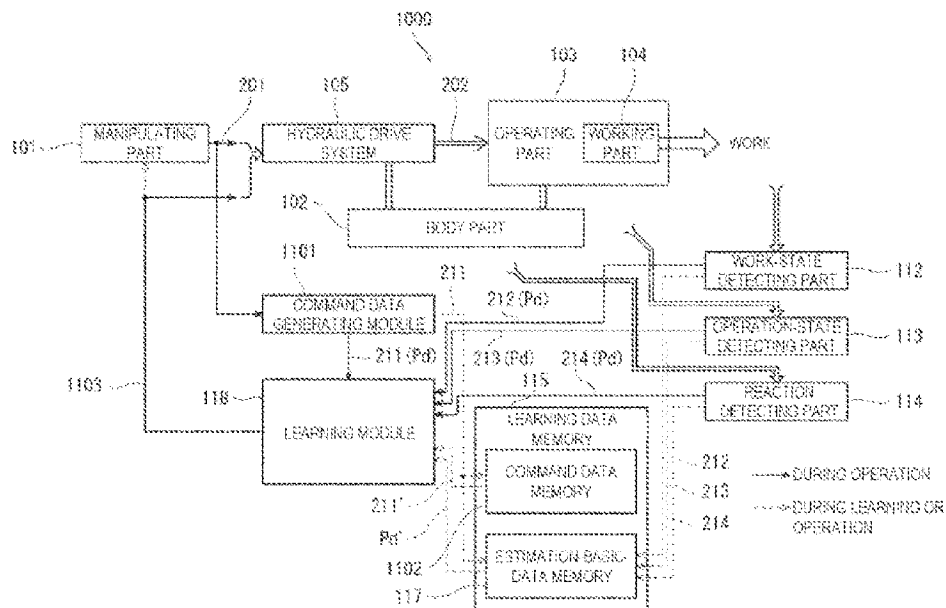

FIG. 1

FIG. 3 of *Kamon*, which is reproduced below, shows a " hydraulic excavator 10 with learning function ... provided with the body part 102 ... provided with a traveling body (carrier) 19" and where a " swiveling body 15 is provided on the body part 102 so as to be swivable about a vertical first rotary axis A1" and "is further provided with a swiveling motor 14 which causes the swiveling body 15 to swivel" (*Id.* at [0114]-[0115]).
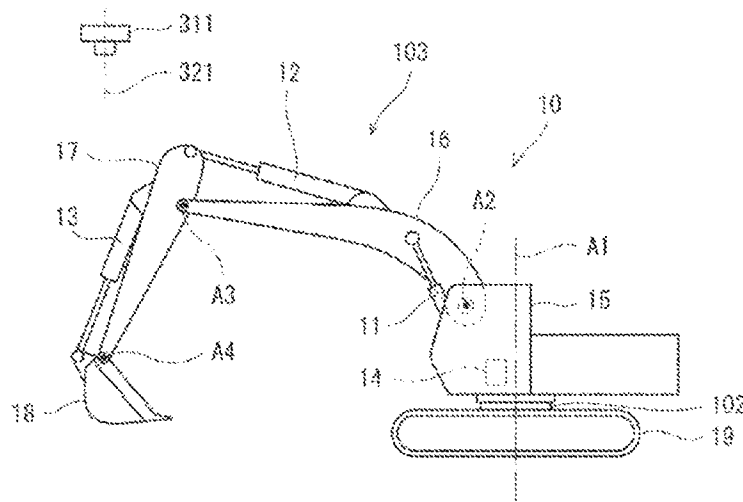
FIG. 3

Kamon further describes that "[t]he swiveling body 15 or the body part 102 of the hydraulic excavator 10 is provided with a gyroscope 314" that "detects … vibration (including an excitation force, acceleration, and angular acceleration) of the swiveling body 15 or the body part 102, … and vibration data as the reaction data 214." (*Id.* at [0114]-[0115]). *Kamon* further describes that "when the bucket 18 acts on the ground (digs the ground, rakes the earth, etc.), the operator determines, by sensing the reaction, whether or not the intended work (action) is performed … [t]hen, the operator determines the next manipulation instantly considering these" (*Id.* at [0181]).

<div align="center">Brief review of Yamada</div>

As best understood, *Yamada* describes "[a]n attachment monitoring system" that "includes a working machine, attachments, a measurement unit, a terminal device, and a server device" (*Yamada* at [0009]). FIG. 1B of *Yamada*, which is reproduced below, shows a "breaker monitoring system 1 includes a measurement unit 16 … attached to an arm 14" that "measure[s] a vibration and a hydraulic pressure of the driven breaker 15 that is identified on the basis of individual identifying information"(*Id.* at [0032]-[0033]).

FIG.1B
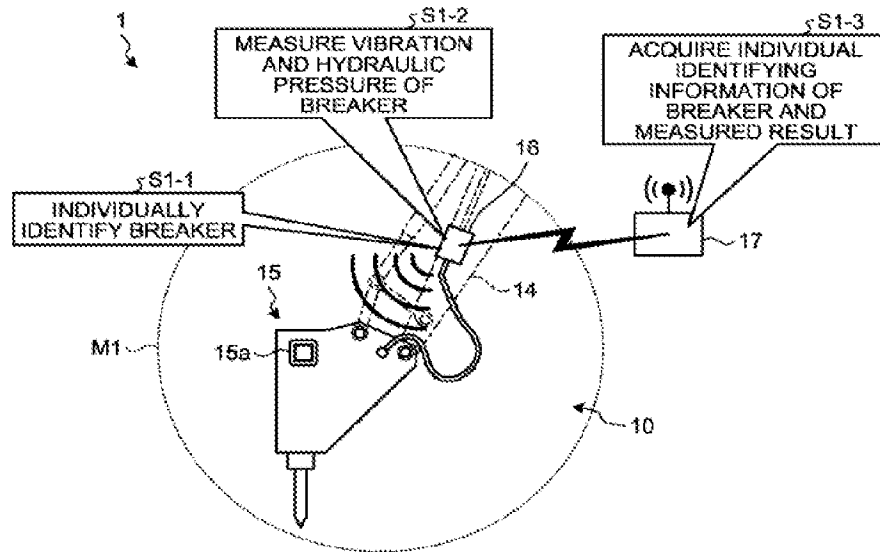
FIGS. 7A and 7B of *Yamada*, which are reproduced below, show "examples of estimation of operation states of the breaker 15" including "in FIG. 7A, the analyzing unit 21c can estimate whether an operation state of the breaker 15 is "normal strike" or "blank blowing" on the basis of a detected result of the hydraulic pressure sensor 16b ... [s]pecifically, when a hydraulic pressure detected by the hydraulic pressure sensor 16b indicates a waveform that exceeds a predetermined threshold indicating that the breaker 15 is in a striking state, the analyzing unit 21c estimates whether the operation state is "normal strike" or "blank blowing" by ... a form of this waveform" and "in FIG. 7B, ... when a hydraulic pressure detected by the hydraulic pressure sensor 16b indicates a waveform indicating that the waveform is less than a predetermined threshold, namely the breaker 15 is in a strike standby state, and ... the vibration sensor 16c detects a vibration (see part M2 illustrated in FIG. 7B), the analyzing unit 21 c estimates that this case is "sweep"" (*Id.* at [0099]-[0104]).
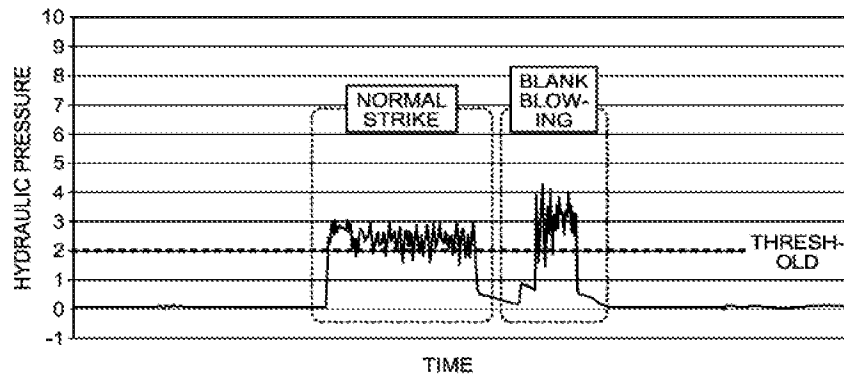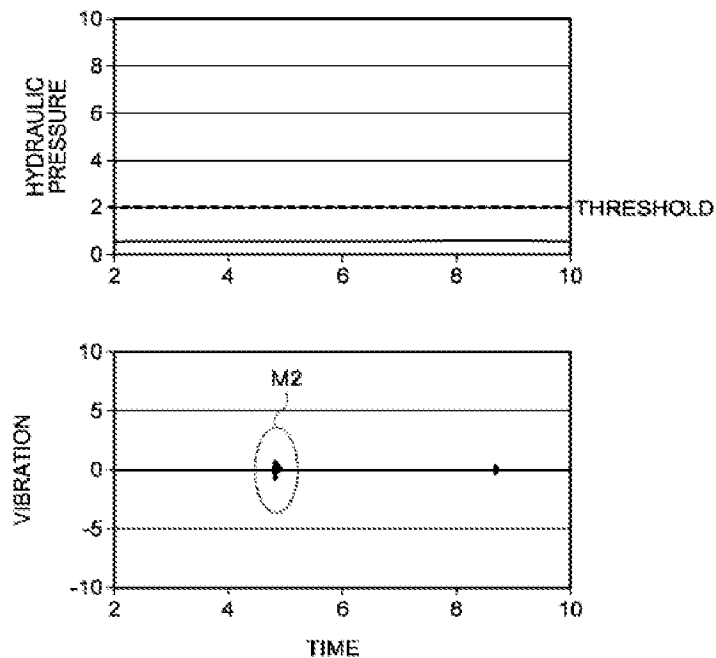
FIG.7A

FIG.7B

Amendment

Without conceding the correctness of the rejections, and solely in the interest of expediting prosecution, Applicant has amended claim 1 (and similarly claims 11 and 20) to recite the following features:

> *providing the one or more features to a machine-learning model to generate a model output, the model output including a set of IOG candidates corresponding to times at which the implement is interacting with the ground*

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