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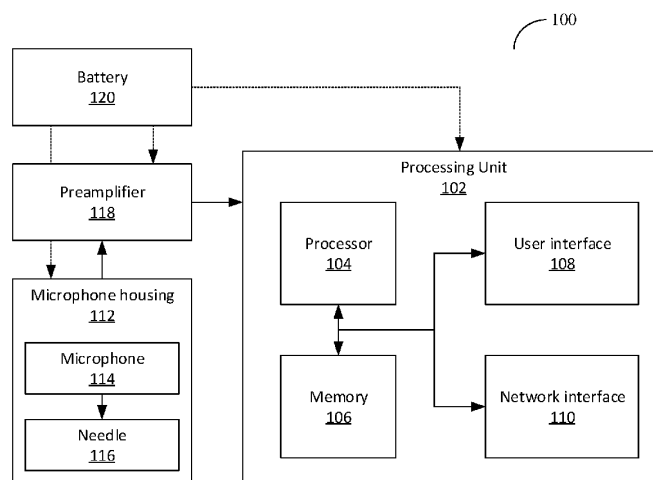


FIG. 1

(57) Abstract: An apparatus is used to detect insect infestations within a tree. The apparatus is used to insert a needle of a microphone housing within the tree. The microphone housing includes a microphone coupled to the needle. The microphone monitors an audio window. Within the audio window a plurality of overlapping audio sub-windows are detected. A mel spectrogram is calculated from the plurality of overlapping audio sub-windows where the mel spectrogram includes a matrix of features. A neural network determines if each of the plurality of overlapping sub-audio windows includes an indication of an insect being present and determines if the indications of an insect being present of the plurality of overlapping audio sub-windows indicates that the tree has an insect infestation.

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