The Mathematical Logic Behind the Catch 22 of MASH

A Handout for CMSC 203 Discrete Structures
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The Catch 22 found in the TV program Mash can be expressed in mathematical logic as follows:

Clinger Says:

P
P → ~S
~S → D
Ergo, D

Clinger's Superior Officer says:

P
P → S
S → ~D
Ergo, ~D

where the propositions *P*, *S*, and *D* are defined as follows:

P: Clinger proves that he is insane.
S: Clinger is sane.
D: Clinger's Superior Officer discharges Clinger from the army.

English translation:

Clinger says:

Clinger proves that that he is insane. See!
If Clinger is not sane, then the army manual says that Clinger's Superior Officer discharges Clinger from the army.
Therefore, Clinger is discharged from the army.

Clinger's Superior Officer says:

Clinger proves that he is insane.
But the very fact that Clinger has the mental where-with-all to prove that he is insane implies that Clinger is sane. Gotcha!
Therefore, Clinger's Superior Officer does not discharge Clinger from the army.