```
lang_auto_wf  THM

⊢  ∀Alph:Type, L:LangOver(Alph)
|  , g:((x,y:Alph*//(x L-induced Equiv y))→𝔹).
|  A(g) ∈ Automata(Alph;x,y:Alph*//(x L-induced Equiv y))
| by Analyze 0 THEN Analyze 0
|
1. Alph : Type
2. L : LangOver(Alph)
⊢  ∀g:((x,y:Alph*//(x L-induced Equiv y))→𝔹).
|  A(g) ∈ Automata(Alph;x,y:Alph*//(x L-induced Equiv y))
| by Inst
|    Thm* ∀L:LangOver(A). EquivRel x,y:A*. x L-induced Equiv y
|    {lang_rel_equi}
|    [Alph;L]
|
3. EquivRel x,y:Alph*. x L-induced Equiv y
⊢   by Unfold `lang_auto` 0
|
4. g : (x,y:Alph*//(x L-induced Equiv y))→𝔹
⊢  <(λs,a. a.s),nil,g>
|  ∈ Automata(Alph;x,y:Alph*//(x L-induced Equiv y))
| by Unfold `automata` 0
|
|\
| 5. s : x,y:Alph*//(x L-induced Equiv y)
| 6. a : Alph
| ⊢  a.s ∈ x,y:Alph*//(x L-induced Equiv y)  by Unfold `member` 0
| |
| ⊢  a.s = a.s  by Analyze 5
| |
| 5. a : Alph
| 6. s1 : Alph*
| 7. s2 : Alph*
| 8. s1 L-induced Equiv s2
| ⊢  a.s1 = a.s2  by Analyze
| |
| ⊢  (a.s1) L-induced Equiv (a.s2)
| | by Unfold `lang_rel` 0 THEN Reduce 0
| |
| ⊢  ∀z:Alph*. L(z @ (a.s1)) ⟺ L(z @ (a.s2))  by Analyze 0
| |
| 9. z : Alph*
| ⊢  L(z @ (a.s1)) ⟺ L(z @ (a.s2))
| | by Unfold `lang_rel` 8 THEN Reduce 8
| |
| 8. ∀z:Alph*. L(z @ s1) ⟺ L(z @ s2)
| 9. z : Alph*
| ⊢   by Witness8 z @ [a]
| |
| 8. z : Alph*
| 9. L((z @ [a]) @ s1) ⟺ L((z @ [a]) @ s2)
| ⊢
| | by RWH
| |    (LemmaC
```

```
| |     Thm* ∀as,bs,cs:T*. ((as @ bs) @ cs) = (as @ (bs @ cs))
| |     {append_assoc})
| |    9
| |    THENA
| |    (Auto THEN Fold ‘languages‘ 0)
| |
| 9. L(z @ [a] @ s1) ⟺ L(z @ [a] @ s2)
| ⊢   by Reduce 9
|
.\
. ⊢  nil ∈ x,y:Alph*//(x L-induced Equiv y)  by Analyze
END
```