$\langle\{\}, \{\}, id, \{[a']f_n^C\langle(a\,b).X, Y\rangle \approx_? [b']f_n^C\langle(a\,c)(c\,d).X, Y\rangle\}\rangle$

$(\approx_? [\mathbf{ab}])$

$\langle\{\}, \{\}, id, \{f_n^C\langle(a\,b).X, Y\rangle \approx_? f_n^C\langle(a\,c)(c\,d)(a'\,b').X, (a'\,b').Y\rangle, \; a' \#_? f_n^C\langle(a\,c)(c\,d).X, Y\rangle\}\rangle$

$(\approx_? \mathbf{C})$

Left branch:

$\langle\{\}, \{\}, id, \{(a\,b).X \approx_? (a\,c)(c\,d)(a'\,b').X, \; Y \approx_? (a'\,b').Y, \; a' \#_? f_n^C\langle(a\,c)(c\,d).X, Y\rangle\}\rangle$

$(\approx_? \mathbf{inv})$

$\langle\{\}, \{\}, id, \{Y \approx_? (a'\,b').Y, \; a' \#_? f_n^C\langle(a\,c)(c\,d).X, Y\rangle, \; (a\,b)(a'\,b')(c\,d)(a\,c).X \approx_? X\}\rangle$

$(\approx_? \mathbf{inv})$

$\langle\{\}, \{\}, id, \{a' \#_? f_n^C\langle(a\,c)(c\,d).X, Y\rangle, \; (a\,b)(a'\,b')(c\,d)(a\,c).X \approx_? X, \; (a'\,b').Y \approx_? Y\}\rangle$

$(\#_? \mathbf{app})$

$\langle\{\}, \{\}, id, \{a' \#_? \langle(a\,c)(c\,d).X, Y\rangle, \; (a\,b)(a'\,b')(c\,d)(a\,c).X \approx_? X, \; (a'\,b').Y \approx_? Y\}\rangle$

$(\#_? \mathbf{pair})$

$\langle\{\}, \{\}, id, \{a' \#_? (a\,c)(c\,d).X, \; a' \#_? Y, \; (a\,b)(a'\,b')(c\,d)(a\,c).X \approx_? X, \; (a'\,b').Y \approx_? Y\}\rangle$

$(\#_? \mathbf{var})$

$\langle\{a'\#X\}, \{\}, id, \{a' \#_? Y, \; (a\,b)(a'\,b')(c\,d)(a\,c).X \approx_? X, \; (a'\,b').Y \approx_? Y\}\rangle$

$(\#_? \mathbf{var})$

$\langle\{a'\#Y, a'\#X\}, \{\}, id, \{(a\,b)(a'\,b')(c\,d)(a\,c).X \approx_? X, \; (a'\,b').Y \approx_? Y\}\rangle$

$(\top)$

Right branch:

$\langle\{\}, \{\}, id, \{(a\,b).X \approx_? (a'\,b').Y, \; Y \approx_? (a\,c)(c\,d)(a'\,b').X, \; a' \#_? f_n^C\langle(a\,c)(c\,d).X, Y\rangle\}\rangle$

$(\approx_? \mathbf{inst})$

$\langle\{\}, \{\}, X/(a'\,b')(a\,b).Y, \{Y \approx_? (a'\,b')(a\,b)(a\,c)(c\,d)(a'\,b').Y, \; a' \#_? f_n^C\langle(a'\,b')(a\,b)(a\,c)(c\,d).Y, Y\rangle\}\rangle$

$(\approx_? \mathbf{inv})$

$\langle\{\}, \{\}, X/(a'\,b')(a\,b).Y, \{a' \#_? f_n^C\langle(a'\,b')(a\,b)(a\,c)(c\,d).Y, Y\rangle, \; (a'\,b')(c\,d)(a\,c)(a\,b)(a'\,b').Y \approx_? Y\}\rangle$

$(\#_? \mathbf{app})$

$\langle\{\}, \{\}, X/(a'\,b')(a\,b).Y, \{a' \#_? \langle(a'\,b')(a\,b)(a\,c)(c\,d).Y, Y\rangle, \; (a'\,b')(c\,d)(a\,c)(a\,b)(a'\,b').Y \approx_? Y\}\rangle$

$(\#_? \mathbf{pair})$

$\langle\{\}, \{\}, X/(a'\,b')(a\,b).Y, \{a' \#_? (a'\,b')(a\,b)(a\,c)(c\,d).Y, \; a' \#_? Y, \; (a'\,b')(c\,d)(a\,c)(a\,b)(a'\,b').Y \approx_? Y\}\rangle$

$(\#_? \mathbf{var})$

$\langle\{b'\#Y\}, \{\}, X/(a'\,b')(a\,b).Y, \{a' \#_? Y, \; (a'\,b')(c\,d)(a\,c)(a\,b)(a'\,b').Y \approx_? Y\}\rangle$

$(\#_? \mathbf{var})$

$\langle\{a'\#Y, b'\#Y\}, \{\}, X/(a'\,b')(a\,b).Y, \{(a'\,b')(c\,d)(a\,c)(a\,b)(a'\,b').Y \approx_? Y\}\rangle$

$(\top)$