

CF Industries Holdings, Inc.
Form SC 13G
September 25, 2015

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

SCHEDULE 13G

Under the Securities Exchange Act of 1934

CF Industries Holdings, Inc.

(Name of Issuer)

Common Stock, \$0.01 par value

(Title of Class of Securities)

125269100

(CUSIP Number)

September 15, 2015

(Date of Event Which Requires Filing of this Statement)

Check the following box to designate the rule pursuant to which the Schedule is filed:

- Rule 13d-1(b)
- Rule 13d-1(c)

“ Rule 13d-1(d)

*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

CUSIP No. 125269100

Names of Reporting Persons

**I.R.S. Identification Nos. of
above persons (entities only)**

1.

D. E. Shaw Heliant Manager,
L.L.C.¹

27-1289787

**Check the Appropriate Box
2. if a Member of a Group (See
Instructions)**

(a)

(b)

3. SEC Use Only

**4. Citizenship or Place of
Organization**

Delaware

**Number
of**

Shares

**Beneficially
Owned** Sole Voting Power

**Owned
by** 5.

Each -0-

Reporting

**Person
With**

Shared Voting Power

6.

11,872,097

7. Sole Dispositive Power

-0-

Shared Dispositive Power

8.

11,872,097

Aggregate Amount

Beneficially Owned by Each

9. Reporting Person

11,872,097

Check if the Aggregate

**10. Amount in Row (9) Excludes
Certain Shares (See
Instructions) "**

Percent of Class

Represented by Amount in

11. Row (9)

5.1%

Type of Reporting Person

12. (See Instructions)

OO

¹ On September 15, 2015, D. E. Shaw & Co., L.P. and Mr. David E. Shaw became the beneficial owners of more than 5% of the class of securities. On September 16, 2015, D. E. Shaw & Co., L.L.C. became the beneficial owner of more than 5% of the class of securities. On September 18, 2015, D. E. Shaw Heliant Manager, L.L.C. and D. E. Shaw Heliant Adviser, L.L.C. became the beneficial owners of more than 5% of the class of securities. The beneficial ownership information provided in this document is current as of September 18, 2015.

CUSIP No. 125269100

Names of Reporting Persons

**I.R.S. Identification Nos. of
above persons (entities only)**

1.

D. E. Shaw Heliant Adviser,
L.L.C.

27-1289715

**Check the Appropriate Box
2. if a Member of a Group (See
Instructions)**

(a)

(b)

3. SEC Use Only

**Citizenship or Place of
4. Organization**

Delaware

**Number
of**

Shares

**Beneficially
Owned by**

Sole Voting Power

**Owned
by**

Each -0-

Reporting

**Person
With**

Shared Voting Power

6.

11,872,097

7. Sole Dispositive Power

-0-

Shared Dispositive Power

8.

11,872,097

Aggregate Amount

Beneficially Owned by Each

9. Reporting Person

11,872,097

Check if the Aggregate

**10. Amount in Row (9) Excludes
Certain Shares (See
Instructions) "**

Percent of Class

Represented by Amount in

11. Row (9)

5.1%

Type of Reporting Person

12. (See Instructions)

IA

CUSIP No. 125269100

Names of Reporting Persons

**1. I.R.S. Identification Nos. of
above persons (entities only)**

D. E. Shaw & Co., L.L.C.

13-3799946

**2. Check the Appropriate Box
if a Member of a Group (See
Instructions)**

(a)

(b)

3. SEC Use Only

**4. Citizenship or Place of
Organization**

Delaware

**Number
of**

Shares

**Beneficially
Owned
Sole Voting Power**

**Owned
by**

Each -0-

Reporting

**Person
With**

Shared Voting Power

6,11,887,901

7. Sole Dispositive Power

-0-

Shared Dispositive Power

8. 11,887,901

**Aggregate Amount
Beneficially Owned by Each**

9. Reporting Person

11,887,901

**10. Check if the Aggregate
Amount in Row (9) Excludes
Certain Shares (See
Instructions) "**

**Percent of Class
Represented by Amount in**

11. Row (9)

5.1%

**12. Type of Reporting Person
(See Instructions)**

OO

CUSIP No. 125269100

Names of Reporting Persons

**I.R.S. Identification Nos. of
1. above persons (entities only)**

D. E. Shaw & Co., L.P.

13-3695715

**Check the Appropriate Box
2. if a Member of a Group (See
Instructions)**

(a)

(b)

3. SEC Use Only

**4. Citizenship or Place of
Organization**

Delaware

**Number
of**

Shares

**Beneficially
Owned by
Sole Voting Power**

**Owned
by**

Each -0-

Reporting

**Person
With**

Shared Voting Power

6.

12,319,242

Sole Dispositive Power

7.

-0-

Shared Dispositive Power

8.

12,319,442

Aggregate Amount

Beneficially Owned by Each

9. Reporting Person

12,319,442

Check if the Aggregate

10. Amount in Row (9) Excludes

**Certain Shares (See
Instructions) "**

Percent of Class

Represented by Amount in

11. Row (9)

5.3%

Type of Reporting Person

12. (See Instructions)

IA, PN

CUSIP No. 125269100

Names of Reporting Persons

**1. I.R.S. Identification Nos. of
above persons (entities only)**

David E. Shaw

**2. Check the Appropriate Box
if a Member of a Group (See
Instructions)**

(a)

(b)

3. SEC Use Only

**4. Citizenship or Place of
Organization**

United States

**Number
of**

Shares

**Beneficially
Owned**
Sole Voting Power

**Owned
by**

Each -0-

Reporting

**Person
With**

Shared Voting Power

6.

12,319,242

Sole Dispositive Power

7.

-0-

8. Shared Dispositive Power

12,319,442

**Aggregate Amount
Beneficially Owned by Each**

9. Reporting Person

12,319,442

**10. Check if the Aggregate
Amount in Row (9) Excludes
Certain Shares (See
Instructions) "**

**11. Percent of Class
Represented by Amount in
Row (9)**

5.3%

**12. Type of Reporting Person
(See Instructions)**

IN

Item 1.

(a) Name of Issuer

CF Industries Holdings, Inc.

(b) Address of Issuer's Principal Executive Offices

4 Parkway North, Suite 400
Deerfield, Illinois 60015

Item 2.

(a) Name of Person Filing

D. E. Shaw Heliant Manager, L.L.C.
D. E. Shaw Heliant Adviser, L.L.C.
D. E. Shaw & Co., L.L.C.
D. E. Shaw & Co., L.P.
David E. Shaw

(b) Address of Principal Business Office or, if none, Residence

The business address for each reporting person is:
1166 Avenue of the Americas, 9th Floor
New York, NY 10036

(c) Citizenship

D. E. Shaw Heliant Manager, L.L.C. is a limited liability company organized under the laws of the state of Delaware.
D. E. Shaw Heliant Adviser, L.L.C. is a limited liability company organized under the laws of the state of Delaware.
D. E. Shaw & Co., L.L.C. is a limited liability company organized under the laws of the state of Delaware.
D. E. Shaw & Co., L.P. is a limited partnership organized under the laws of the state of Delaware.
David E. Shaw is a citizen of the United States of America.

(d) Title of Class of Securities

Common Stock, \$0.01 par value

(e) CUSIP Number

125269100

Item 3. If this statement is filed pursuant to Rule 13d-1(b) or 13d-2(b) or (c), check whether the person filing is a:

Not Applicable

Item 4. Ownership

As of September 18, 2015:

(a) Amount beneficially owned:

D. E. Shaw
Heliant Manager, 11,872,097 shares
L.L.C.:

This is composed of (i) 8,092,198 shares in the name of D. E. Shaw Kalon Portfolios, L.L.C., (ii) exposure to 1,375,000 shares through derivative instruments in the name of D. E. Shaw Kalon Portfolios, L.L.C., and (iii) 2,404,899 shares in the name of D. E. Shaw Special Opportunities Portfolios, L.L.C.

D. E. Shaw
Heliant Adviser, 11,872,097 shares
L.L.C.:

This is composed of (i) 8,092,198 shares in the name of D. E. Shaw Kalon Portfolios, L.L.C., (ii) exposure to 1,375,000 shares through derivative instruments in the name of D. E. Shaw Kalon Portfolios, L.L.C., and (iii) 2,404,899 shares in the name of D. E. Shaw Special Opportunities Portfolios, L.L.C.

D. E.
Shaw &
Co.,
L.L.C.: 11,887,901 shares

This is composed of (i) 8,092,198 shares in the name of D. E. Shaw Kalon Portfolios, L.L.C., (ii) exposure to 1,375,000 shares through derivative instruments in the name of D. E. Shaw Kalon Portfolios, L.L.C., (iii) 2,404,899 shares in the name of D. E. Shaw Special Opportunities Portfolios, L.L.C., (iv) 11,300 shares that Diffusion Markets, L.L.C. has the right to acquire through the exercise of listed call options, (v) 4,359 shares in the name of Diffusion Markets, L.L.C., (vi) 88 shares in the name of D. E. Shaw Oculus Portfolios, L.L.C., and (vii) 57 shares in the name of D. E. Shaw Asymptote Portfolios, L.L.C.

D. E.
Shaw &
Co., L.P.: 12,319,442 shares

This is composed of (i) 8,092,198 shares in the name of D. E. Shaw Kalon Portfolios, L.L.C., (ii) exposure to 1,375,000 shares through derivative instruments in the name of D. E. Shaw Kalon Portfolios, L.L.C., (iii) 2,404,899 shares in the name of D. E. Shaw Special Opportunities Portfolios, L.L.C., (iv) 230,730 shares in the name of D. E. Shaw Valence Portfolios, L.L.C., (v) 200,000 shares that D. E. Shaw Valence Portfolios, L.L.C. has the right to acquire through the exercise of listed call options, (vi) 11,300 shares that Diffusion Markets, L.L.C. has the right to acquire through the exercise of listed call options, (vii) 4,359 shares in the name of Diffusion Markets, L.L.C., (vi) 88 shares in the name of D. E. Shaw Oculus Portfolios, L.L.C., (viii) 57 shares in the name of D. E. Shaw Asymptote Portfolios, L.L.C., and (ix) 811 shares under the management of D. E. Shaw Investment Management, L.L.C.

David E.
Shaw: 12,319,442 shares

This is composed of (i) 8,092,198 shares in the name of D. E. Shaw Kalon Portfolios, L.L.C., (ii) exposure to 1,375,000 shares through derivative instruments in the name of D. E. Shaw Kalon Portfolios, L.L.C., (iii) 2,404,899 shares in the name of D. E. Shaw Special Opportunities Portfolios, L.L.C., (iv) 230,730 shares in the name of D. E. Shaw Valence Portfolios, L.L.C., (v) 200,000 shares that D. E. Shaw Valence Portfolios, L.L.C. has the right to acquire through the exercise of listed call options, (vi) 11,300 shares that Diffusion Markets, L.L.C. has the right to acquire through the exercise of listed call options, (vii) 4,359 shares in the name of Diffusion Markets, L.L.C., (vi) 88 shares in the name of D. E. Shaw Oculus Portfolios, L.L.C., (viii) 57 shares in the name of D. E. Shaw Asymptote Portfolios, L.L.C., and (ix) 811 shares under the management of D. E. Shaw Investment Management, L.L.C.

(b) Percent of class:

D. E. Shaw Heliant Manager, L.L.C.:	5.1%
D. E. Shaw Heliant Adviser, L.L.C.:	5.1%
D. E. Shaw & Co., L.L.C.:	5.1%
D. E. Shaw & Co., L.P.:	5.3%
David E. Shaw:	5.3%

(c) Number of shares to which the person has:

- (i) Sole power to vote or to direct the vote:
- | | |
|-------------------------------------|------------|
| D. E. Shaw Heliant Manager, L.L.C.: | -0- shares |
| D. E. Shaw Heliant Adviser, L.L.C.: | -0- shares |
| D. E. Shaw & Co., L.L.C.: | -0- shares |
| D. E. Shaw & Co., L.P.: | -0- shares |
| David E. Shaw: | -0- shares |

(ii) Shared power to vote or to direct the vote:

D. E. Shaw Heliant Manager, L.L.C.:	11,872,097 shares
D. E. Shaw Heliant Adviser, L.L.C.:	11,872,097 shares
D. E. Shaw & Co., L.L.C.:	11,887,901 shares
D. E. Shaw & Co., L.P.:	12,319,242 shares
David E. Shaw:	12,319,242 shares

(iii) Sole power to dispose or to direct the disposition of:

D. E. Shaw Heliant Manager, L.L.C.:	-0- shares
D. E. Shaw Heliant Adviser, L.L.C.:	-0- shares
D. E. Shaw & Co., L.L.C.:	-0- shares
D. E. Shaw & Co., L.P.:	-0- shares
David E. Shaw:	-0- shares

(iv) Shared power to dispose or to direct the disposition of:

D. E. Shaw Heliant Manager, L.L.C.:	11,872,097 shares
D. E. Shaw Heliant Adviser, L.L.C.:	11,872,097 shares
D. E. Shaw & Co., L.L.C.:	11,887,901 shares
D. E. Shaw & Co., L.P.:	12,319,442 shares
David E. Shaw:	12,319,442 shares

David E. Shaw does not own any shares directly. By virtue of David E. Shaw's position as President and sole shareholder of D. E. Shaw & Co., Inc., which is the general partner of D. E. Shaw & Co., L.P., which in turn is the manager and investment adviser of D. E. Shaw Valence Portfolios, L.L.C., the investment adviser of D. E. Shaw Oculus Portfolios, L.L.C., and the managing member of (i) D. E. Shaw Investment Management, L.L.C., (ii) D. E. Shaw Heliant Adviser, L.L.C., which in turn is the investment adviser of D. E. Shaw Kalon Portfolios, L.L.C. and D. E. Shaw Special Opportunities Portfolios, L.L.C., and (iii) D. E. Shaw Adviser, L.L.C., which in turn is the investment adviser of D. E. Shaw Asymptote Portfolios, L.L.C., which in turn is the managing member of Diffusion Markets Holdings, L.L.C., which in turn is the managing member of Diffusion Markets, L.L.C., and by virtue of David E. Shaw's position as President and sole shareholder of D. E. Shaw & Co. II, Inc., which is the managing member of D. E. Shaw & Co., L.L.C., which in turn is the manager of D. E. Shaw Oculus Portfolios, L.L.C. and the managing member of (i) D. E. Shaw Heliant Manager, L.L.C., which in turn is the manager of D. E. Shaw Kalon Portfolios, L.L.C. and D. E. Shaw Special Opportunities Portfolios, L.L.C., and (ii) D. E. Shaw Manager, L.L.C., which in turn is the manager of D. E. Shaw Asymptote Portfolios, L.L.C., which in turn is the managing member of Diffusion Markets Holdings, L.L.C., which in turn is the managing member of Diffusion Markets, L.L.C., David E. Shaw may be deemed to have the shared power to vote or direct the vote of 12,319,242 shares, and the shared power to dispose or direct the disposition of 12,319,442 shares, the 12,319,442 shares as described above constituting 5.3% of the outstanding shares and, therefore, David E. Shaw may be deemed to be the beneficial owner of such shares. David E. Shaw disclaims beneficial ownership of such 12,319,442 shares.

Item 5. Ownership of Five Percent or Less of a Class

Not Applicable

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

Not Applicable

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company or Control Person.

Not Applicable

Item 8. Identification and Classification of Members of the Group

Not Applicable

Item 9. Notice of Dissolution of Group

Not Applicable

Item 10. Certification

By signing below, each of D. E. Shaw Heliant Manager, L.L.C., D. E. Shaw Heliant Adviser, L.L.C., D. E. Shaw & Co., L.L.C., D. E. Shaw & Co., L.P., and David E. Shaw certify that, to the best of such reporting person's knowledge and belief, the securities referred to above were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having such purposes or effect.

SIGNATURE

After reasonable inquiry and to the best of their knowledge and belief, the undersigned certify that the information set forth in this statement is true, complete and correct. Powers of Attorney, dated December 16, 2014, granted by David E. Shaw in favor of Nathan Thomas, are attached hereto.

Dated: September 25, 2015

D. E. Shaw Heliant
Manager, L.L.C.

By: /s/ Nathan Thomas
Nathan Thomas
Authorized Signatory

D. E. Shaw Heliant Adviser,
L.L.C.

By: /s/ Nathan Thomas
Nathan Thomas
Chief Compliance Officer

D. E. Shaw & Co., L.L.C.

By: /s/ Nathan Thomas
Nathan Thomas
Authorized Signatory

D. E. Shaw & Co., L.P.

By: /s/ Nathan Thomas
Nathan Thomas
Chief Compliance Officer

David E. Shaw

By: /s/ Nathan Thomas

Nathan Thomas
Attorney-in-Fact for David E. Shaw