(No Model.)

N. POULSON.

COLUMN.

No. 521,320. Patented June 12, 1894.

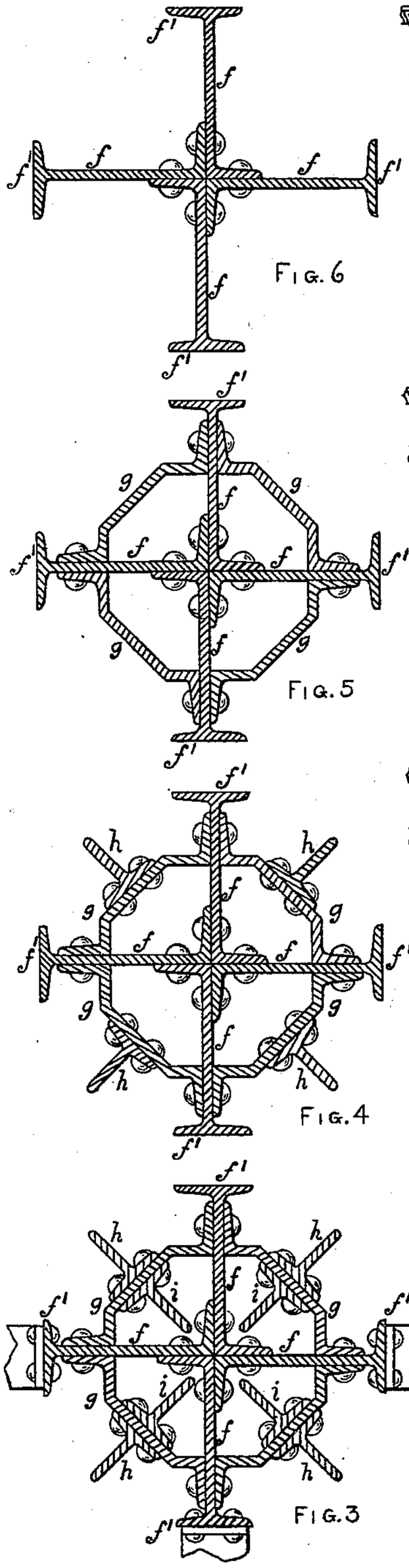

FIG. 6

FIG. 5

FIG. 4

FIG. 3

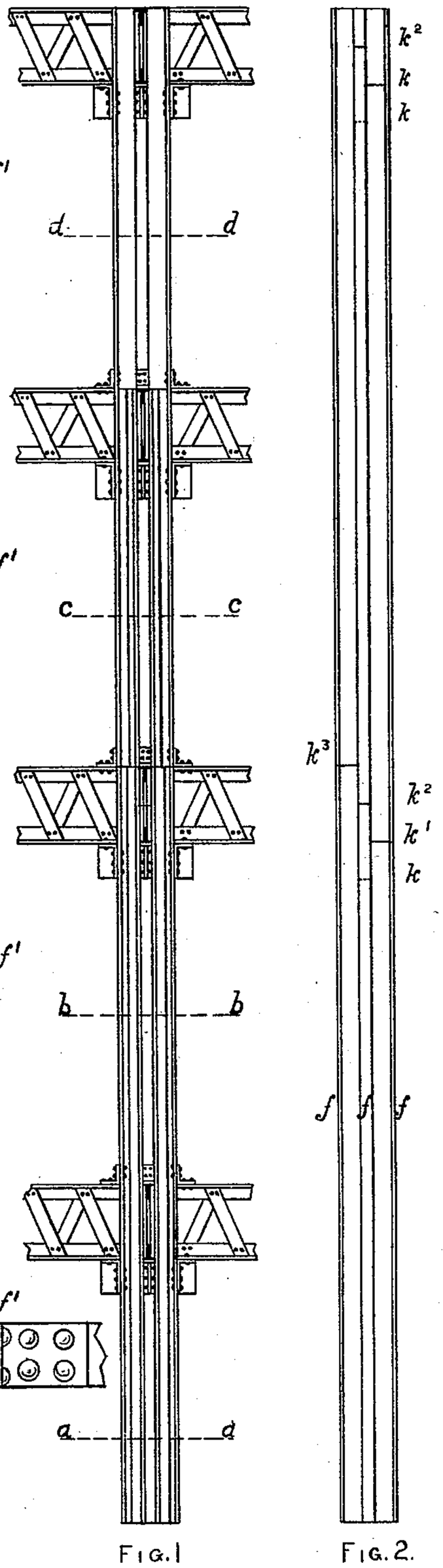

FIG. 1

FIG. 2.

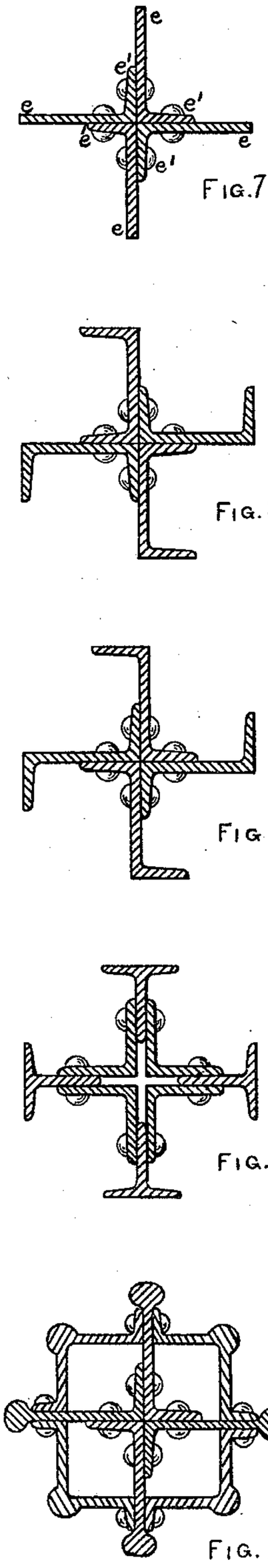

FIG. 7

FIG. 8

FIG. 9

FIG. 10

FIG. 11

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COLUMN.

SPECIFICATION forming part of Letters Patent No. 521,320, dated June 12, 1894.

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To all whom it may concern:

Be it known that I, NIELS POULSON, a citizen of the United States, residing at Fort Hamilton, in the county of Kings and State of New York, have invented a new and useful Column, of which the following is a specification.

My invention relates to iron or steel columns built up from bars riveted together, the bars being arranged radially, that is so that the leg or web of one bar stands at an angle to the leg or web of the adjoining bars, and each bar having a flange along the inner edge for riveting it to one of the adjoining bars.

My invention consists of an iron or steel column, composed of a central core of radially disposed bars, each of which has a flange at the inner end by which it is riveted to the leg or web of one of the adjoining bars, and intermediately arranged reinforcing bars.

My invention consists further of a column in which the radially disposed bars herein referred to and constituting what may be termed the core, whether having a head or flange at the outer end of each or not, form when set in position one continuous piece reaching, in a building for instance, from the cellar to the roof, the bars being made of such lengths and so arranged that the abutting ends of each line of bars break joints with the abutting ends of the adjoining lines of bars.

My invention further consists in various details of construction and arrangement hereinafter specified.

In the drawings—Figure 1, represents an elevation of this improved wrought iron or steel column four stories in height. Fig. 2, represents an elevation of the core of the column. Fig. 3, represents a cross section on the line *a*, *a*, of Fig. 1. Fig. 4, represents a cross section on the line *b*, *b*, of Fig. 1. Fig. 5, represents a cross section on the line *c*, *c*, of Fig. 1. Fig. 6, represents a cross section on the line *d*, *d*, of Fig. 1. Fig. 7, represents a cross section of the simplest form of column to which my invention may be applied. Figs. 8, 9, 10 and 11, represent cross sections of modifications of column. Figs. 1 and 2, are drawn on a smaller scale than the other figures.

The same letters of reference are used on the several figures to indicate identical parts.

The general form of the central core or portion of the column is represented in cross section in Fig. 7. It consists as shown of four angle irons so arranged that the leg *e*, of one projects at a right angle to the legs of the two adjoining ones, while the feet *e'*, lie close against the back of the legs to which they are riveted. Thus the angles or bars may be said to be radially arranged, the foot or flange running along the inner edge of the leg or web thereof.

For the sake of adding strength to a simple column composed of radially arranged bars only flanged T bars *f*, may be used as shown in cross section in Fig. 6, the head *f'*, of the T also affording a ready means for the attachment of brackets and angles for supporting and securing girders to the column.

In most cases where the column is of any considerable length or height and has to support loads at a number of different points along its height it will require strengthening in proportion as the load upon it increases. The column, whether constructed as shown in Fig. 7, or as shown in the other figures, is admirably adapted for proportioning its strength along its height to the loads to be carried, by reinforcing it as is illustrated in Figs. 5, 4, 3 and 1. Thus the column shown in Fig. 1, supports loads at four different points, reaching say from the basement to the roof of a four story building. The column embodies throughout its entire length the flanged T-bar construction shown in cross section in Fig. 6, and the part of the column illustrated separately in elevation in Fig. 2, may be termed its core. The core may, however, as well consist of any of the forms shown in Figs. 7, 8 and 9. The core is left bare at the roof story. At the story below the core is re-inforced by intermediately arranged plates *g*, as shown in Fig. 5. At the next story below another reinforcement by the T-bars *h*, riveted to the plates is provided. At the basement a still further reinforcement is provided by T-bars *i*, also riveted to the plates *g*. It will be observed that the reinforcements are so devised that they can be readily riveted to the original

core; also that all the shapes used in the construction of my column are either already in the market or can be easily rolled.

In the manufacture of all long columns I propose to use rolled bars of such even lengths as are obtainable from the mills in the manufacture of what I have termed the core of the column, and to so arrange the bars that the abutting ends of one line break joints with the abutting ends of the adjoining lines, as shown in Fig. 2, where these cross joints are lettered respectively k, k', k^2, k^3. To obtain this result there must necessarily be in a four bar core, three short bars at one end, and at the other end three or four short bars according as the whole length of the core is or is not a multiple of the long bars used. This break joint construction will also be carried out in the application of the reinforcing plates and bars where they require to be of greater total length than is obtainable from the mills. This break joint construction of the column favors economy of manufacture, does away with the use of fish plates, and adds stiffness. The central core construction of my column also plays a very important part in its use for tall structures, designed to support loads at different heights, because the core can be run up in one piece the entire length, that is continuously or mast like, affording the greatest obtainable rigidity against cross strains and can be reinforced as before specified.

An incidental but very important feature of this column is that the angular spaces of the core will run clean from the cellar to the roof, affording excellent pockets for the reception of pipes and wires.

To allow of a cheap and strong construction of column consisting of radially disposed bars each having a flange at its inner end and riveted to the leg or rib of an adjoining bar, and a head or flange at its outer end, I have conceived of the idea of utilizing channel or Z bars as found in the market for the purpose. The proper disposition of the bars is illustrated in Figs. 8 and 9, and will be understood without further description. The advantage of this construction is that the wrought or rolled column may be constructed from forms found in the market and the necessity for the special construction of rolls or other devices to produce the forms of flanged core bar shown in Figs. 3, 4 and 5, be thus avoided. Channel and Z bars are full equivalents for the purpose and I so use them.

The column shown in Fig. 10, is of an especially desirable formation and affords flanges at the periphery for attachment of beams and girders. It is built up of angle and T bars found on the market, the angle bars being arranged with their apexes at the axis of the column while the webs of the T-bars are riveted between said angle bars.

Fig. 11, practically explains itself. The bars making up the core structure are like Fig. 7, excepting that their ends are somewhat thickened. The intermediate reinforcing bars are also somewhat different shaped being more in the form of an angle bar somewhat enlarged at the angle.

What I claim as my invention is—

1. A built-up wrought iron or steel column composed substantially as before set forth, of a central core of radially disposed bars each of which has a flange at the inner end by which it is riveted to the leg or web of one of the adjoining bars, and intermediately arranged reinforcing bars.

2. A continuous built-up wrought iron or steel column for tall structures or buildings of several stories composed, substantially as before set forth, of radially disposed bars each of which has a flange at the inner end by which it is riveted to the leg or web of one of the adjoining bars and abutting ends of each line of bars breaking joints with the abutting ends of the adjoining lines of bars.

3. A built-up wrought iron or steel column composed, substantially as set forth, of a central core of radially disposed bars each of which has a flange at the inner end by which it is riveted to the leg or web of one of the adjoining bars, and intermediately arranged reinforcing bars each provided with one or more strengthening ribs or flanges.

4. A built-up wrought iron or steel column composed, substantially as set forth, of angle bars arranged with their apexes at the axis of the column, and T-bars having their webs between and riveted to said angle-bars.

NIELS POULSON.

Witnesses:
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A. C. ANDERSON.