No. 732,164. PATENTED JUNE 30, 1903.

W. M. BURDON.

CAMBERING OR STRAIGHTENING DEVICE FOR GIRDERS AND BEAMS.

APPLICATION FILED FEB. 18, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

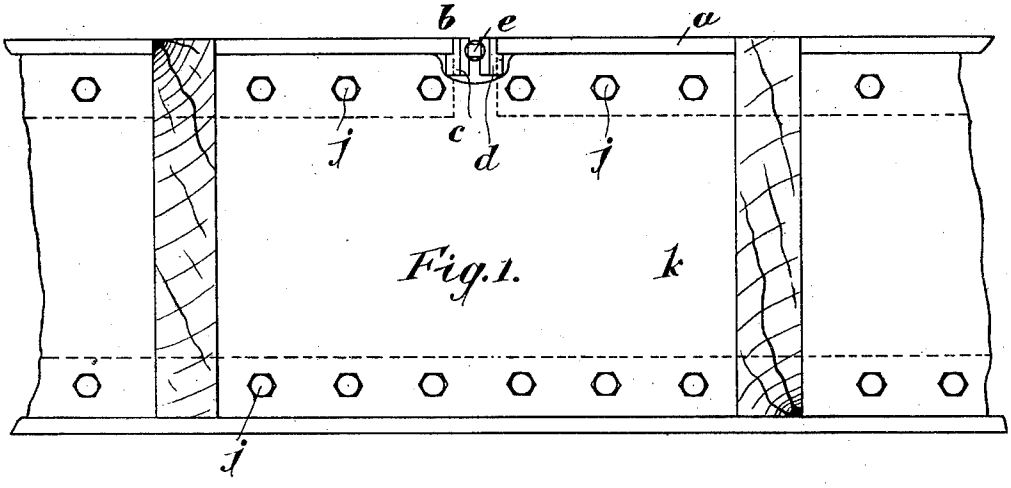
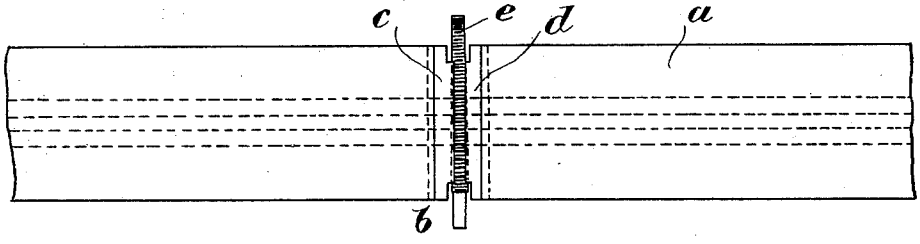


Fig. 1.

Fig. 3.



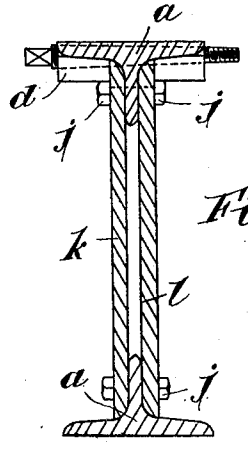


Fig. 2.

Witnesses.

L. Mori.

L. Waldman

Inventor.

Wm. Murray Burdon

by B. Singer.

Att'y.

THE N. PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 4 SHEETS—SHEET 2.

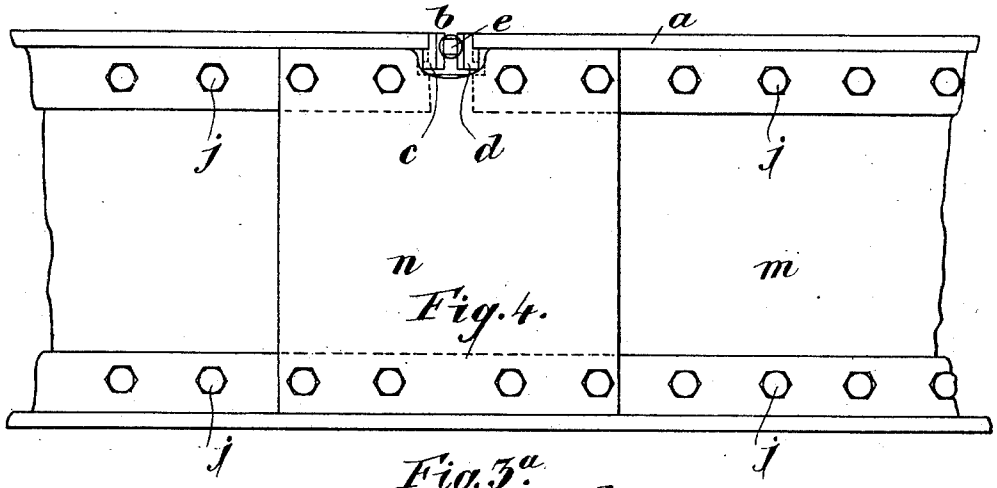
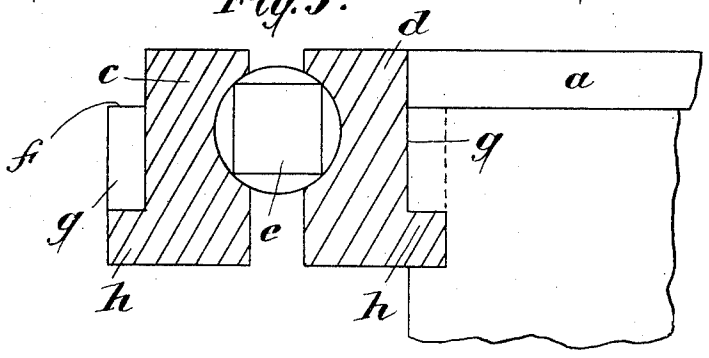


Fig. 4.

Fig. 3a.



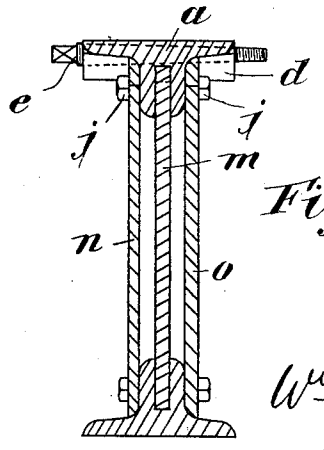


Fig. 5.

Witnesses.

H. Mori.

L. Baldwin

Inventor.

Wm. Murray Burdon

by J. J. Singer

Att'y.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 4 SHEETS—SHEET 3.

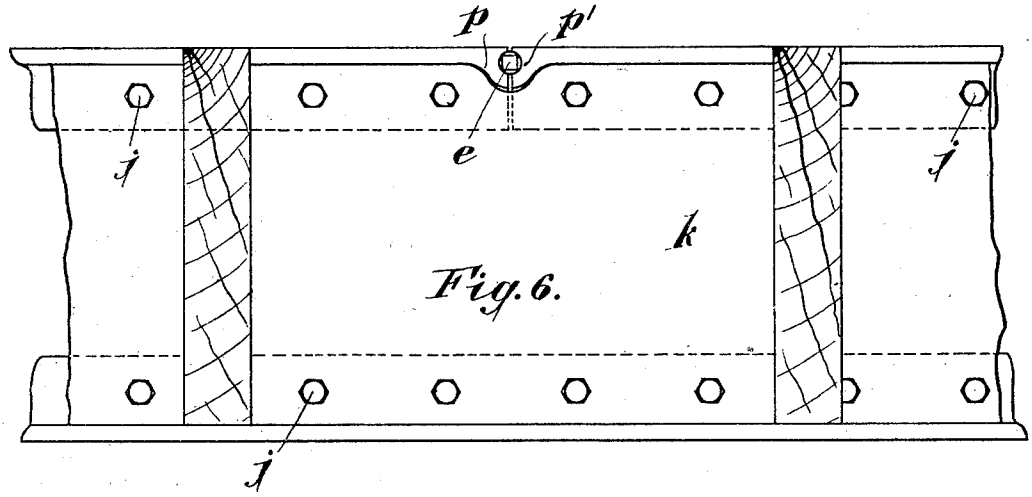
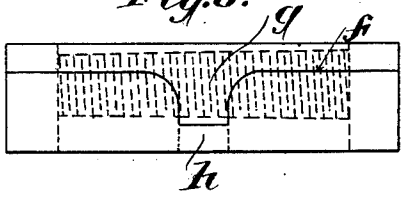


Fig. 6.

Fig. 8.



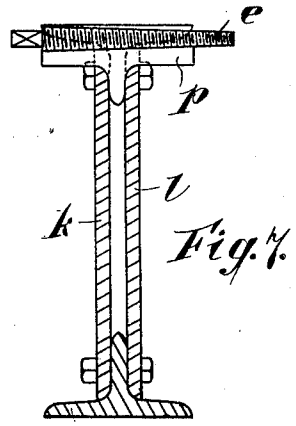


Fig. 7.

Fig. 9.

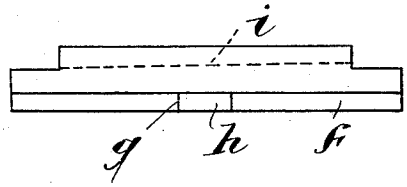


Fig. 10.

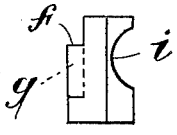
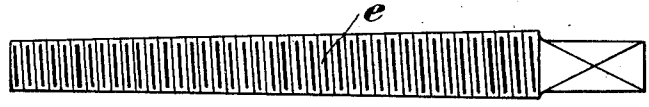


Fig. 11.



Witnesses.

H. Noa.

L. Feldman.

Inventor.

Wm. Murray Burdon

by F. J. Singer

Att'y.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 732,164. PATENTED JUNE 30, 1903.

W. M. BURDON.

CAMBERING OR STRAIGHTENING DEVICE FOR GIRDERS AND BEAMS.

APPLICATION FILED FEB. 18, 1903.

NO MODEL. 4 SHEETS—SHEET 4.

Fig. 12.

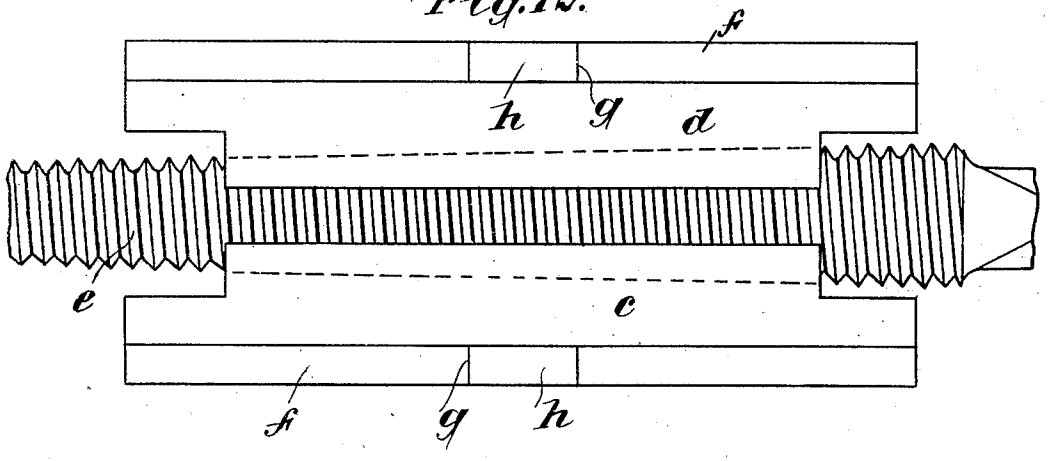


Fig. 13.

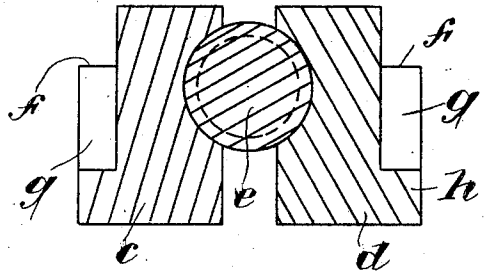


Fig. 14.

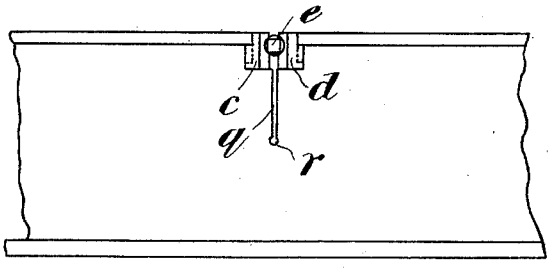
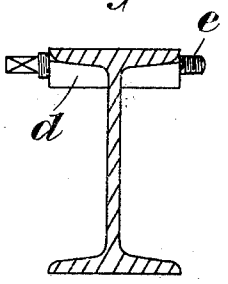


Fig. 15.



Witnesses.

H. Mori.

L. Waldman

Inventor.

Wm Murray Burdon

by P. B. Singer

Att'y.

No. 732,164. Patented June 30, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM MURRAY BURDON, OF BELLSHILL, SCOTLAND.

CAMBERING OR STRAIGHTENING DEVICE FOR GIRDERS OR BEAMS.

SPECIFICATION forming part of Letters Patent No. 732,164, dated June 30, 1903.

Application filed February 18, 1903. Serial No. 143,979. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MURRAY BURDON, engineer, a subject of the King of Great Britain, residing at Caldervale Works, Bellshill, county of Lanark, Scotland, have invented a certain new and useful Improved Arrangement for Cambering or Straightening Girders and Steel Beams or Joists, of which the following is a specification.

The object of my present invention is to provide an improved arrangement for cambering or straightening girders and steel beams or joists; and this arrangement consists, essentially, of a taper screw which is screwed into an opening in the top member of the girder. The taper screw is preferably inserted into half-nuts or screwed blocks or the like inserted in the opening in the girder. The screw possesses certain advantages over the plain key or wedge. For instance, it can be readily screwed into or out of place, it can be screwed up to give the exact camber desired, it can be slackened when necessary, and it cannot work out of place. There may be any desired number of tapered screws inserted in the top member of the girder.

In order that my invention may be properly understood, I have hereunto appended four explanatory sheets of drawings, whereon—

Figure 1 is a side elevation of part of a girder, showing one form of the screw "cambering" arrangement. Fig. 2 is a section of the same. Fig. 3 is a plan of the same. Fig. 3ª is an enlarged view showing the cambering arrangement. Fig. 4 is a side elevation of another girder. Fig. 5 is a section of the same. Fig. 6 is a side elevation of a girder, showing another form of screw cambering arrangement. Fig. 7 is a section of the same. Figs. 8, 9, and 10 are respectively side, plan, and end views of a screw-block or half-nut. Fig. 11 is a view of the taper screw. Figs. 12 and 13 are enlarged plan and sectional views of the cambering device. Figs. 14 and 15 show the cambering arrangement applied to ordinary H-beams.

Referring to the drawings, the same reference-letters wherever repeated indicate the same or similar parts.

The girder shown at Figs. 1 and 2 has its top member constituted by the T-iron *a* cut or made with an opening at *b*. Into this opening two half-nuts or screwed metal blocks *c d* are fitted, and screwed horizontally into these half-nuts or blocks is the taper screw *e*, preferably made of steel. The construction of the screw *e* and the blocks *c d* is clearly shown at Figs. 8 to 12. It will be seen from Fig. 11 that the screw is made tapered throughout its length and is provided with a square end, so that it can be readily turned by a key. Each block or half-nut is made, preferably, of solid steel, with a longitudinal ledge *f* at its upper side adapted to engage with the horizontal part or web of the T-bar *a* and with a vertical recess *g*, adapted to engage with the vertical web of the T-bar. The part *h* of the block may be adapted to fit into a check or recess cut in the vertical web of the T-bar, as shown at Figs. 1 and 3ª. The part *h* may be dispensed with and the vertical recess *g* made to extend right down to the bottom of the block, thereby obviating the necessity for checking out or cutting the T-bar. As the ledge *f* engages with the under side of the horizontal web of the T-bar, the block is prevented from rising up out of place, and as the recess *g* engages the vertical web of the T-bar the block is prevented from moving laterally. If the block has the piece *h*, engaging a check in the T-bar, (see Fig. 3ª,) then the block is prevented from moving downward out of place. Each block is grooved or hollowed longitudinally at *i*, and the groove is cut with a partial screw-thread, as indicated in dotted lines at Fig. 8. Of course the screwing is made to correspond with the thread of the taper screw *e*.

The top row of bolts *j* of the plates *k l* of the girder in proximity to the cut part of the T-bar is or may be passed through oval holes or slots in said plates, and the plates themselves are cut away at top (see Fig. 1) to allow space for the screw and blocks.

When the invention is applied to an I-girder of the section shown at Fig. 5, known as a "patent flange-bar girder," the screw and blocks are inserted in place as before, and after the girder has been cambered up the part in proximity to the place where the screw has been inserted may be strengthened

by means of side or fish plates *n o*, bolted in place, as shown clearly at Figs. 4 and 5.

In some cases the top member of the girder may be made in sections with the ends rolled up or thickened, as shown at *p p'*, Figs. 6 and 7. The thickened parts *p p'* butt together and are tapped with a screw-thread, and the taper screw *e* is simply screwed into the tapped hole formed in the parts *p p'*.

The cambering arrangement can be applied to an ordinary steel H beam or joist, as shown at Figs. 14 and 15. In this case the top flange and part of the web is cut out for the reception of the screw and blocks, and a vertical saw-cut is also made in the web, as shown at *q*. This saw-cut may extend down to a hole *r*, bored at the center of the web.

If desired, in some cases the screw *e* may be inserted vertically into the top member of the girder. I do not recommend this arrangement, however. The invention can be applied to any suitable construction of girder.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a girder, steel beam, or joist of a tapered screw which is inserted in an opening in the top member of the girder, beam, or joist.

2. In combination, a girder, beam, or joist having its top member cut, blocks fitted in the cut and a tapered screw inserted into the blocks.

3. In combination, a girder, beam, or joist having an opening in its top member, blocks inserted in the opening, partial screw-threads cut in the blocks and a tapered screw inserted between the blocks.

4. In combination, a girder, beam, or joist having an opening in its top member, blocks inserted in the opening, a tapered screw inserted between the blocks, and metal strengthening-plates having recesses cut in them, substantially as described.

5. In combination, a girder, beam, or joist having an opening in its top member, blocks inserted in the opening, a longitudinal ledge *f* on each block, and a tapered screw inserted between the blocks, substantially as described.

6. In combination, a girder, beam, or joist having an opening in its top member, blocks inserted in the opening, a longitudinal ledge on each block and a vertical recess in each block and a tapered screw inserted between the blocks, substantially as described.

Signed at Glasgow, Scotland, this 23d day of December, 1902.

WM. MURRAY BURDON.

Witnesses:
WILLIAM GALL,
WILLIAM FLEMING.