

R. WRIGHT.

APPARATUS FOR BENDING PIPES OR TUBES.

No. 174,608.

Patented March 7, 1876.

Fig. 1,

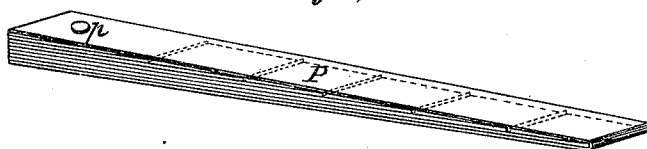


Fig. 2,

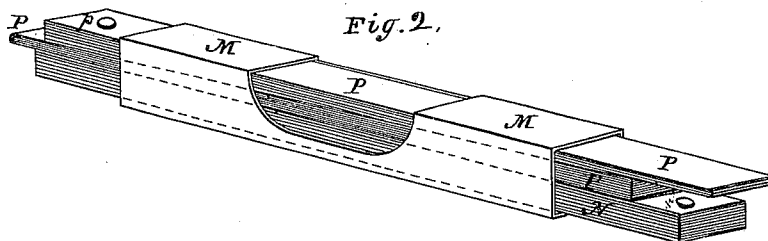


Fig. 3,

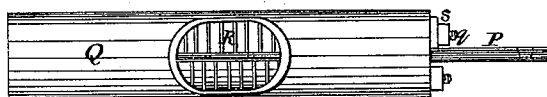


Fig. 4,

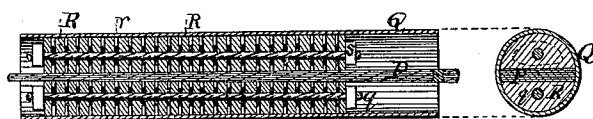
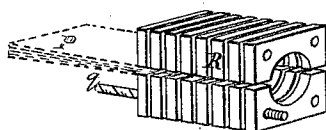


Fig. 5



Witnesses
W. R. Edelen
W. B. Masson

Inventor
Robert Wright
by E. E. Masson
att'y.

UNITED STATES PATENT OFFICE.

ROBERT WRIGHT, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR BENDING PIPES OR TUBES.

Specification forming part of Letters Patent No. **174,608**, dated March 7, 1876; application filed February 17, 1876.

To all whom it may concern:

Be it known that I, ROBERT WRIGHT, of the city of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Bending Metallic Pipes or Tubes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents, in perspective, one of the wedges formed of flat plates of different lengths inclosed in a bent spring-plate, to be used to press the packing against the inner walls of the pipe. Fig. 2 represents, in perspective, a piece of square pipe partially in section, showing the packing formed of a series of thin flat plates, placed lengthwise within the pipe, and the wedges used to retain it in position. Fig. 3 represents, in side view, a piece of round pipe partially in section, so as to exhibit the transverse plates or half-disks that fill the interior of the pipe. Fig. 4 represents the same in longitudinal and in transverse section. Fig. 5 represents, in perspective, series of plates, to be used in bending square pipes.

In bending gas and other pipes, the metal on the inner curve is ordinarily compressed, and liable to crimp or bend, and thus reduce the original sectional area of the pipe. The object of my invention is to completely support the pipe in its interior, so that while being bent it shall retain its original sectional form; and my invention relates to a packing composed of thin spring-plates of metal, paper card-board, or other suitable flexible material, held firmly in a longitudinal position within the pipe that is to be bent by wedges, formed also of thin spring-plates of different lengths. My invention relates, also, to the combination of series of plates or half-disks and india-rubber washers, strung alternately upon wire ropes; with wedges formed of thin spring-plates, by means of which they can be forced against the walls of the pipe, and support it completely while being bent.

In the drawings, P represents a wedge formed of thin flat plates of spring-metal, paper card-board, or other suitable material cut in different lengths, connected together by rivets or screws *p*, and inclosed in a thin

plate folded over so as to remove the inequalities or steps produced by the different lengths of the thin plates forming the wedge. This wedge P is used to force the internal packing against the walls of the pipe and support them while it is bent. This packing, as shown in Fig. 2, is formed of a series of thin flat spring-plates, N, of metal, paper card-board, or other suitable material, united by rivets or screws *n*. It is forced against one of the walls of the square pipe M by two wedges, P P, formed as above described, and introduced within the pipe in opposite directions, so as to equalize the pressure in the whole length of the pipe where a support is needed. When a round pipe is to be bent, I prefer to use, in connection with a wedge or wedges, P, series of transverse plates or half-disks R, of metal, paper card-board, or other suitable material, as shown in Figs. 3 and 4. These plates or half-disks are strung upon wire ropes *q*, having a nut, *s*, at each extremity to retain them in position, and between each plate there is an elastic washer, *r*, of india-rubber, or other elastic substance, to allow the mandrel formed of the plates R to assume the requisite curve. Each plate R represents the half of a disk, and the two series of plates are forced apart by the wedge or wedges P, and support the pipe while it is bent.

In Fig. 5 is shown a series of the transverse plates R modified in form, so as to be suitable for bending square pipes, each plate being divided into two parts, so as to admit of the introduction of wedges between each series to force them against the walls of the pipe, and it is evident that a suitable mandrel can be formed in the same manner, to suit any form of pipe, by having the transverse plates similar to the cross-section of the pipe.

Having thus fully described my invention, what I claim is—

In combination with a sectional metallic packing made elastic, and adapted to fit the interior of the walls of the pipe or tube to be bent, the wedges P, substantially as and for the purpose described.

ROBERT WRIGHT.

Witnesses:

J. PLANKINTON,
H. H. GREENMAN.