

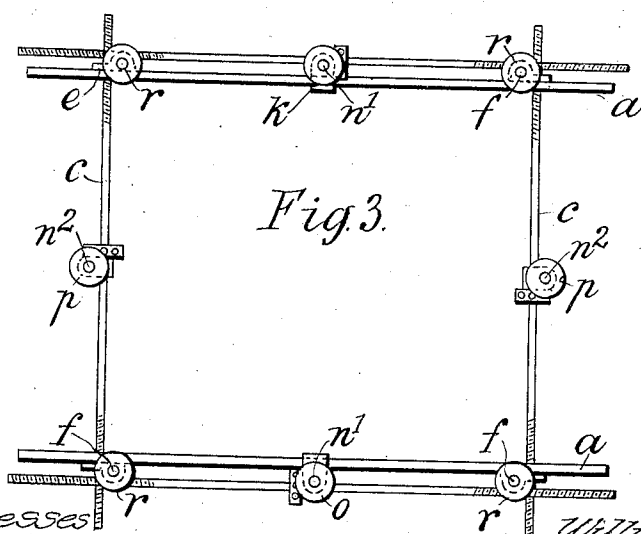
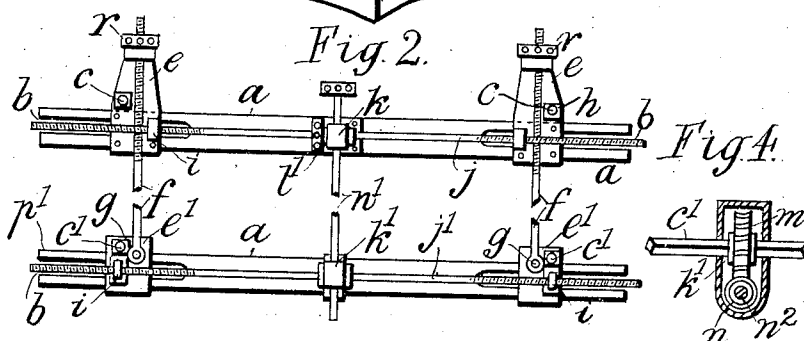
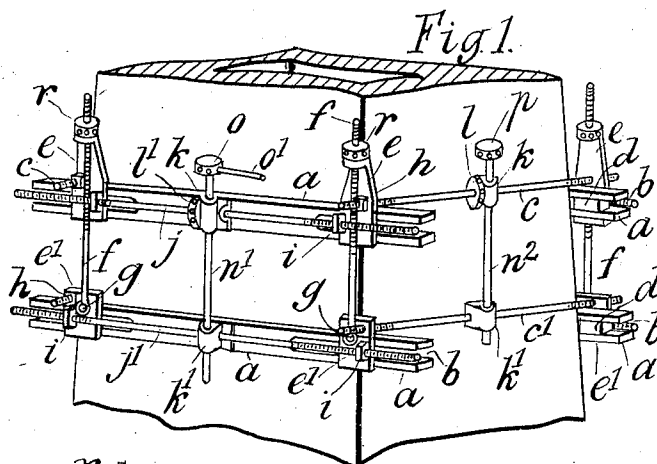
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W. T. WEIGHTMAN.

APPLIANCE FOR USE IN BUILDING CHIMNEYS, &c.

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Witnesses

H. M. Kuchel

John A. Percival.

Inventor

William T. Weightman

BY *K. Richardson*

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM THOMAS WEIGHTMAN, OF DUNHAM-UPON-TRENT, ENGLAND.

APPLIANCE FOR USE IN BUILDING CHIMNEYS, &c.

SPECIFICATION forming part of Letters Patent No. 784,606, dated March 14, 1905.

Application filed June 28, 1904. Serial No. 214,572.

To all whom it may concern:

Be it known that I, WILLIAM THOMAS WEIGHTMAN, a subject of the King of Great Britain and Ireland, residing at Dunham-upon-Trent, near Newark, in the county of Nottingham, England, have invented a new and useful Appliance for Use in Building Chimneys and the Like, of which the following is a specification.

This invention relates to improved means or appliances for use in building chimneys, spires, towers, piers, and other rectangular, polygonal, and cylindrical structures; and it has for its object to dispense with the usual scaffolding, and thereby reduce the cost of construction.

For the purpose of the invention I provide an appliance which is so constructed as to be capable of being raised or lowered and of being contracted or expanded by means of mechanism carried thereon and operated therefrom and to travel upward or downward upon the chimney-shaft or the like during its building. The arrangement is such that when the said appliance is raised to the required extent it can be contracted, and so fix or jam itself against the chimney-shaft, notwithstanding the progressive decrease in cross-sectional area or diameter of this latter, while when to be lowered it can be expanded, and so descend freely.

The invention will be readily understood on reference to the accompanying drawings, wherein—

Figure 1 is a perspective view showing the general arrangement of the appliance in connection with a chimney-shaft. Fig. 2 is an elevation, and Fig. 3 a plan, of said appliance removed from the chimney-shaft. Fig. 4 is a detail.

The improved appliance comprises two superposed frames constituting an upper and a lower staging and formed by four horizontal beams or bars *a*. These latter, which are preferably slotted at *b* for a length of about three or four feet, according to the dimensions of the structure to be built, are held against the opposite sides of said structure by screw-rods *c c'*, thus forming two rectangular frames. The ends of the rods *c c'* may pass either

through the slots *b* or over the beams *a*. In the drawings the latter arrangement is shown. These slots serve as guides to receive the ribs *d* of sliding plates *e* and *e'*, arranged at the four corners of the structure. To the plates *e e'* vertical rods *f* are secured by pivots *g*, the upper ends of said rods being screw-threaded and traversing bearings or guide-holes in the plates *e*. The appliance thus forms a loose or slack construction capable of adapting itself to the slope of the chimney or structure and to the various irregular strains and movements to which it may be subjected. The said plates *e e'* carry brasses or nuts *h* to receive the screw-rods *c c'* and similar brasses or nuts *i* to receive screw-rods *j j'*, disposed in front of and parallel with the beams *a*. The screw-rods *c c'* and *j j'* have right-hand screw-threads at one end and left-hand screw-threads at the other end and are of square section at their middle portion, where they are held in blocks *k k'*. The upper blocks *k* receive the bosses of operating-wheels *l l'*, which are mounted on the square portion of the rods *c j*. The lower blocks *k'* are hollow and receive worm-wheels *m*, mounted on the square portion of the rods *c' j'* and operated by a worm *n* at the lower end of vertical rods *n' n''*, engaging in holes in the blocks *k k'*. The rods *n'* are provided with operating-wheels *o*, and the rods *n''* have similar operating-wheels *p*. The wheels *o* and *p* are fast on their rods; but the screw-rods *f* are controlled by loose wheels *r*, forming nuts and provided with a boss fitted in the upper end of the plates *e*.

The operating-wheels *l, l', o, p*, and *r* may be constructed as hand-wheels or in the form of disks with peripheral holes for the reception of a lever *o'* or loose pin for turning them so as to actuate their respective rods.

The rods *f n' n''* are free to slide in the upper blocks *k*, and those blocks through which the rods *j j'* pass are fixed on the beams *a*. The projecting ends of the said beams serve as supports for the planks used as a working platform, as will be readily understood.

In building a structure—say a chimney—and when a certain amount of masonry has been done the appliance is secured in position. Then when it is desired to raise the said appli-

ance care must be taken to ascertain that the upper frame is first firmly jammed against the chimney. The wheels *p* are then turned so as to cause the screw-rods *c'* to slacken or
 5 loosen the lower beams *a* and allow the entire lower frame or staging to be raised toward the upper one by turning the wheels *r* on the rods *f*. During this raising or lifting movement the plates *e'* are adjusted in the slots *b* to suit
 10 the slope of the masonry by operating the wheels *o* on the rods *n'*. Then the wheels *p* and rods *n'* are operated, so as to tighten or jam the lower frame or staging against the chimney, after which the wheels *l* are turned
 15 so as to loosen the upper beams *a*. The wheels *r* are now revolved in a reverse direction, so as to raise the entire upper frame, and the wheels *l'* are operated to bring about the required lateral adjustment of the plates *e*.
 20 Lastly, the wheels *l* are actuated to tighten or jam the upper frame against the chimney, and the platform-planks are pushed up close to the masonry, which can now be proceeded with until a higher level is reached. It will thus
 25 be seen that the appliance is, as it were, made to climb the chimney or other structure during construction.

If necessary, blocks of wood can be inserted between the appliance and the chimney where
 30 required, so as to insure rigidity.

To permit the descent of the appliance, the converse of the operations above described is effected.

When using the appliance in connection with
 35 the building of a round chimney or chimneys or other structure of large dimensions, there may be more than one vertical screw elevating-rod *f*, (with hand-wheel or its equivalent at the upper part,) and the beams *a* may consist
 40 of compound beams formed by joining several lengths of plank or its equivalent, and when the appliance has been traveled or raised along the structure the space between the angles or corners of the rectangular frames and
 45 the surface of the chimney may be packed with blocks of wood or by two or more wooden uprights held apart by cross-pieces, so as to keep the whole rigid and level for the reception of the staging-planks; but any other
 50 convenient means of securing the appliance to a round chimney may be employed.

Instead of the worm and worm-wheel a rack and pinion or other mechanical equivalent may, if desired, be employed to effect the
 55 raising and lowering motion hereinbefore described.

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

60 1. In an appliance for use in building chimneys and like structures, the combination of

upper and lower slotted horizontal beams constituting a staging, plates mounted to slide in said slotted beams, pivoted vertical rods connecting the said plates and beams, means
 65 for raising or lowering said rods and with them the staging, tie-rods engaged in said plates, and mechanism for operating said tie-rods to allow the beams to approach, and recede from, each other.

2. In an appliance of the character described, the combination with upper and lower slotted beams forming a staging and carrying
 70 slidable plates with pivoted vertical rods and horizontal tie-bars between the corresponding beams, of parallel rods mounted in front of each upper and lower beam and formed with right and left hand screw-threads, an operating-wheel on each of the upper parallel rods,
 75 a block mounted on the boss of said operating-wheel, a worm-wheel fast on each of the lower parallel rods, a block mounted over the worm-wheel, and vertical rods with worms at their lower ends and held in each pair of
 80 blocks to engage the said worm-wheel, and an operating-wheel at their upper ends, as and for the purpose set forth.

3. In an appliance of the character described, the combination with upper and lower
 85 slotted beams forming a staging and carrying slidable plates with pivoted vertical rods, of upper and lower horizontal tie-bars between the corresponding beams, said tie-bars having each right and left hand screws at their ends,
 90 nuts carried on said slidable plates in which the tie-bars engage, and an operating-wheel and block secured in each upper tie-bar.

4. In an appliance of the character described, the combination with upper and lower
 95 slotted beams forming a staging and carrying slidable plates with pivoted vertical rods, of upper and lower horizontal tie-bars between the corresponding beams, said tie-bars having right and left hand screws at their ends, nuts
 100 carried on said slidable plates in which the ends of said tie-bars engage, an operating-wheel secured on each upper tie-bar, a block mounted on each boss of said operating-wheels, a worm-wheel fast on each lower tie-bar,
 105 a hollow boss mounted over each worm-wheel, and vertical rods for each pair of blocks, with worms at their lower ends and operating-wheels at their upper ends, as and for the purpose set forth.

In witness whereof I have hereunto signed
 115 my name in the presence of two subscribing witnesses.

WILLIAM THOMAS WEIGHTMAN.

Witnesses:

EDWARD D. HEARN, Jr.,
 THOS. H. COOK.