

(No Model.)

O. P. BUSHNELL.  
KNUCKLE JOINT PRESS.

No. 266,967.

Patented Nov. 7, 1882.

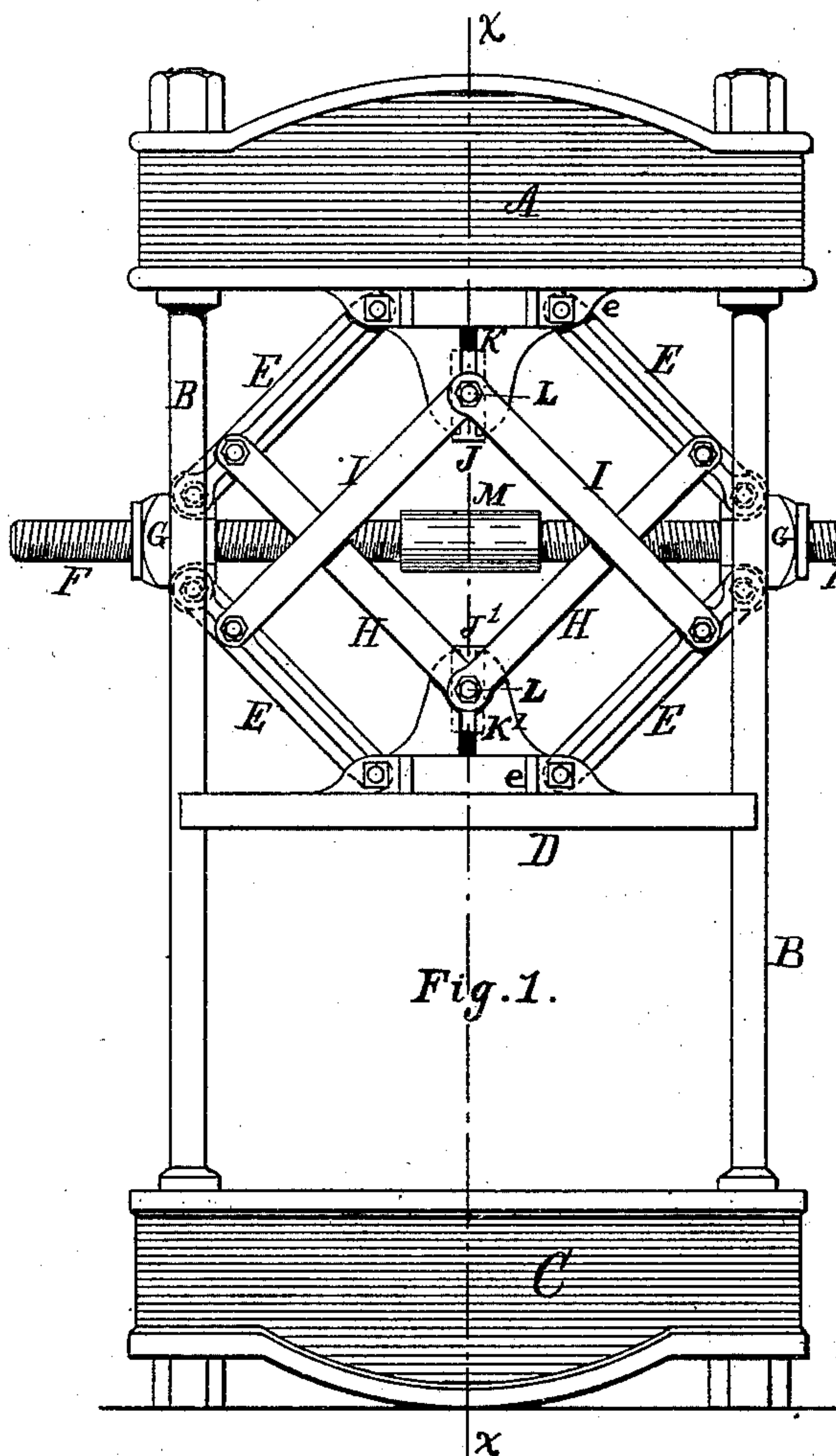


Fig. 1.

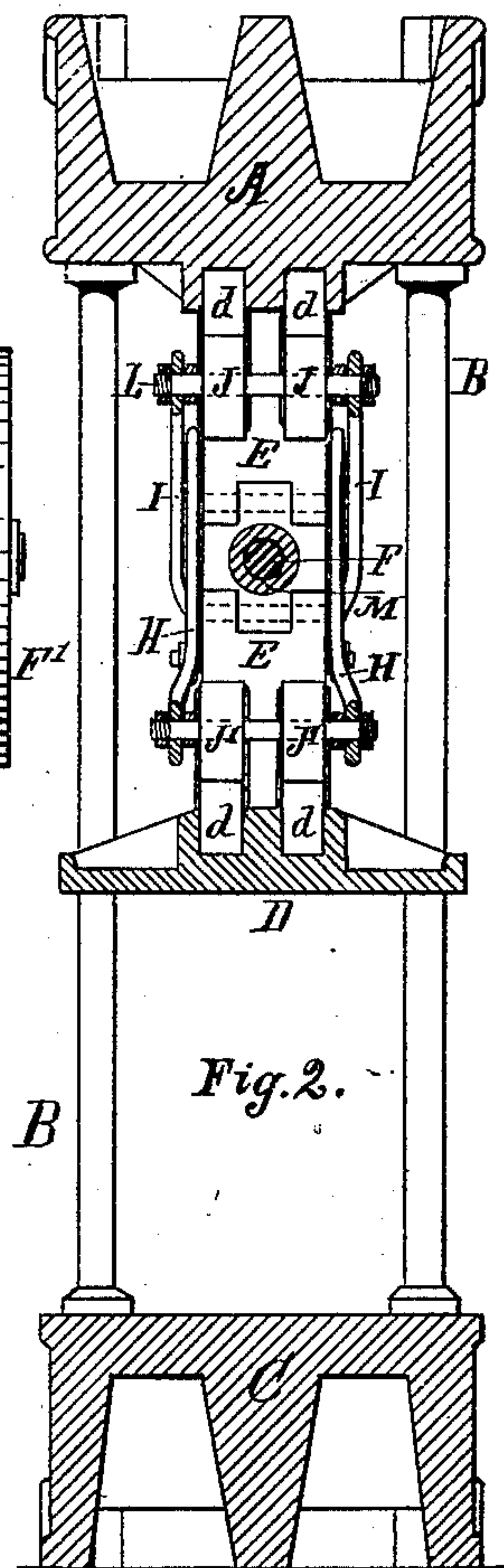


Fig. 2.

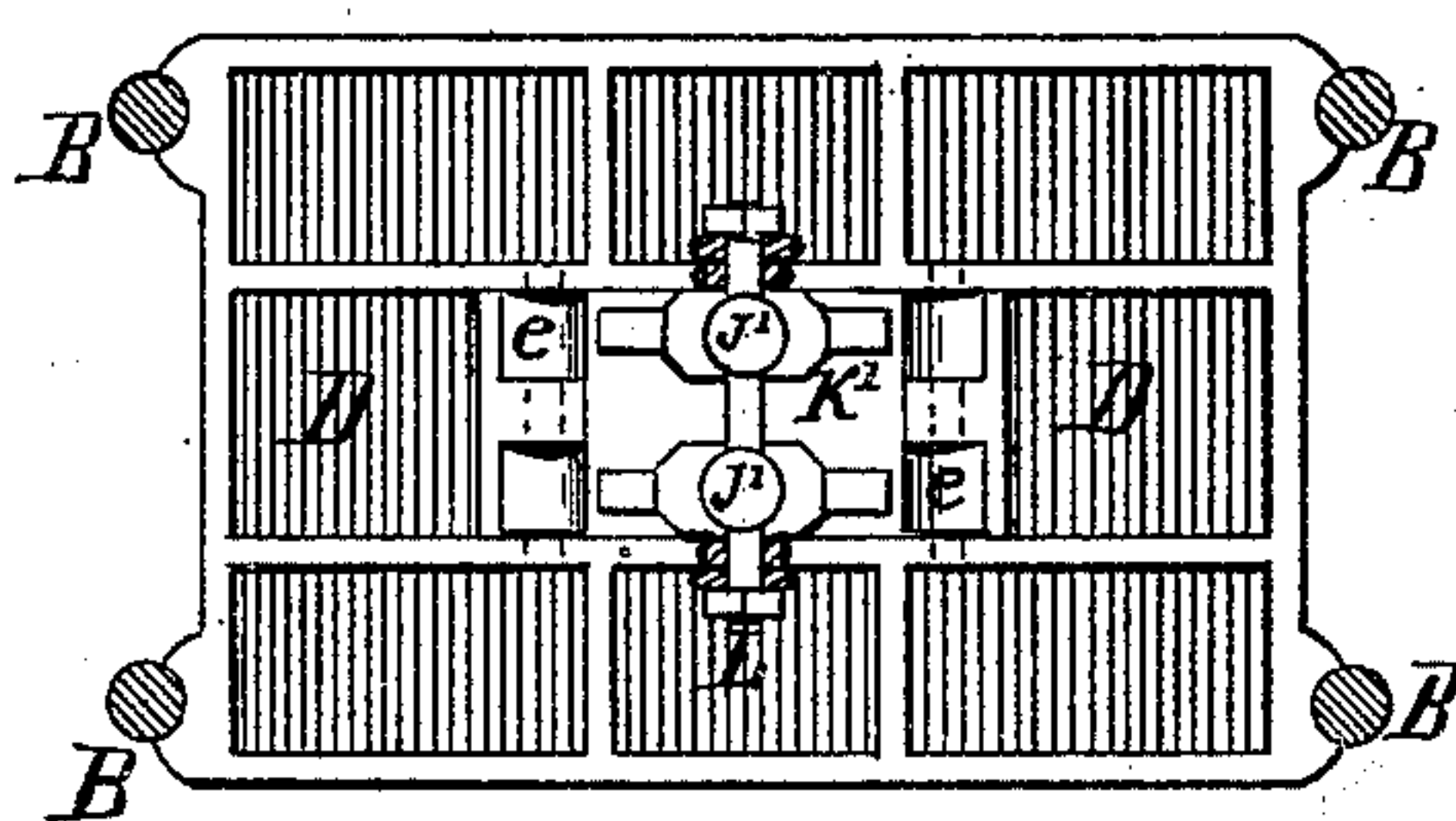


Fig. 3.

Witnesses.

a. w. Mathews.  
D. R. Burt.

Inventor.

Oscar P. Bushnell  
By Chas. H. Burling  
Att'y.



# UNITED STATES PATENT OFFICE.

OSCAR P. BUSHNELL, OF WORCESTER, MASSACHUSETTS.

## KNUCKLE-JOINT PRESS.

SPECIFICATION forming part of Letters Patent No. 266,967, dated November 7, 1882.

Application filed August 24, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, OSCAR P. BUSHNELL, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Knuckle-Joint Presses; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My present invention relates to certain improvements in the construction of that class of knuckle-joint presses described in my Letters Patent No. 231,994, dated September 7, 1880; and it consists, first, in the employment of both an upper and lower set of bracing-arms for sustaining the lateral strains occasioned by inequalities in the material under the pressing-follower and for guarding against unequal movement of the pressing-arms; second, in the peculiar manner of forming the guides or movable pivot-connections at the junction of the bracing-arms; and, third, in the combination, with the right-and-left screw, of a sleeve or guard to prevent the knuckle-joints from carrying the pressing-arms past their common centers of action, as more fully hereinafter explained.

In the drawings, Figure 1 represents a front view of a knuckle-joint press embracing my improvements. Fig. 2 represents a vertical section at the line  $x x$ ; and Fig. 3 represents a plan view of the follower, showing the arrangement of the guides and arm-seats.

In referring to the drawings, A denotes the head of the press; B, the bolts or standards; C, the bed-piece or foot; D, the follower; E, the knuckle-joint arms; F, the right-and-left screw, and G the nuts or knuckles upon the screw by which the arms are worked. Said parts may be made substantially in the ordinary manner, or as shown, and therefore need not be herein more fully described.

H H indicate the brace-bars for connecting the knuckles or upper arms, E E, with the movable slides J', which work in vertical guideways K', centrally arranged upon the follower D.

I I denote similar brace-bars connecting the lower arms, E E, with vertically-moving slides

J, supported and working in the guideways K on the head-piece A of the press, in a manner similar to the corresponding parts upon the follower. The brace-bars, being arranged both in upper and lower sets, give a firm and rigid support against lateral movement or side strains occasioned by inequalities in the compressed material under the respective ends of the follower, while they render the mechanism free in its operation and obviate any tendency to cramp the joints by unequal strains on the several pairs of arms. Said brace-bars may be arranged both at the front and the rear of the pressing-arm, as is indicated, the pivot-bolts passing through from one to the other. The guideways K K' are formed with cylindrical cavities  $d$ , substantially as indicated, and the guiding-slides J and J', to which the brace-bars H and I are connected, are formed in cylindrical shape to fit into said cavities  $d$ . The fitting joints between the slides J J' and their guideways K K' are formed by filling up the space between the surfaces with Babbitt metal melted and poured into the cavities after the slides have been placed, or with a suitable mandrel inserted therein, thus forming a perfectly-fitting joint. Vertical slots are formed in the front and rear of the guideways for the bolts L, that connect the ends of the brace-bars to their guiding-slides. The guideways and slides on the head and follower may be of substantially-similar construction. Said guideways are preferably formed on the same casting or piece as the arm-seats  $e$  or bearing-joints of the pressing-arms E. These parts may be cast integral with the head and follower, or be formed separate and connected thereto by bolts or otherwise. The bracing-bars are properly bent or offset, so as to cross and operate freely without interfering with each other as the pressing-arms E move outward and inward in the operation of the press.

In lieu of making the joints of the guides with Babbitt metal, the cylindrical cavities  $d$  in the guideways for receiving the slides can, if preferred, be drilled or bored out in the cast-iron and the side slots afterward cut through for the connecting-bolts L, the cylindrical slides being turned off to fit within the bores or cavities.

A collar or sleeve, M, is arranged on the screw F, centrally between the right and left



threaded portions. Said sleeve serves as a guard or stop to prevent the knuckles or nuts G from being run together so close as to carry the pressing-arms beyond their common line of centers, or past the straight vertical line between their upper and lower pivots.

The screw F may be provided with a pulley-gear or sprocket-wheel, F', and be operated in the ordinary or any suitable manner. By constructing the guiding-slides J J' cylindrical and forming the guideways K K' in the manner described a very perfect movable support is afforded for the movable pivots of the bracing-arms, and said parts can be constructed conveniently at comparatively small expense.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. In a knuckle-joint press, the combination, with the head-piece A, the follower D, and

pressing-arms E, of an upper and lower system of bracing-arms, I and H, connecting the knuckles or pressing-arms with vertically-movable guides working in guideways K K', respectively supported on said head-piece and follower, substantially as herein shown and described.

2. The slides or guide-blocks J J', of cylindrical shape, and the guideways K K', having cylindrical cavities *d* for the reception of the same, in combination with the arm-seats, pressing-arms, and brace-arms in a knuckle-joint press, substantially as hereinbefore set forth.

Witness my hand this 22d day of August, A. D. 1882.

OSCAR P. BUSHNELL.

Witnesses:

CHAS. H. BURLEIGH,  
CHARLES S. BACON.