No. 711,926. Patented Oct. 21. 1902.

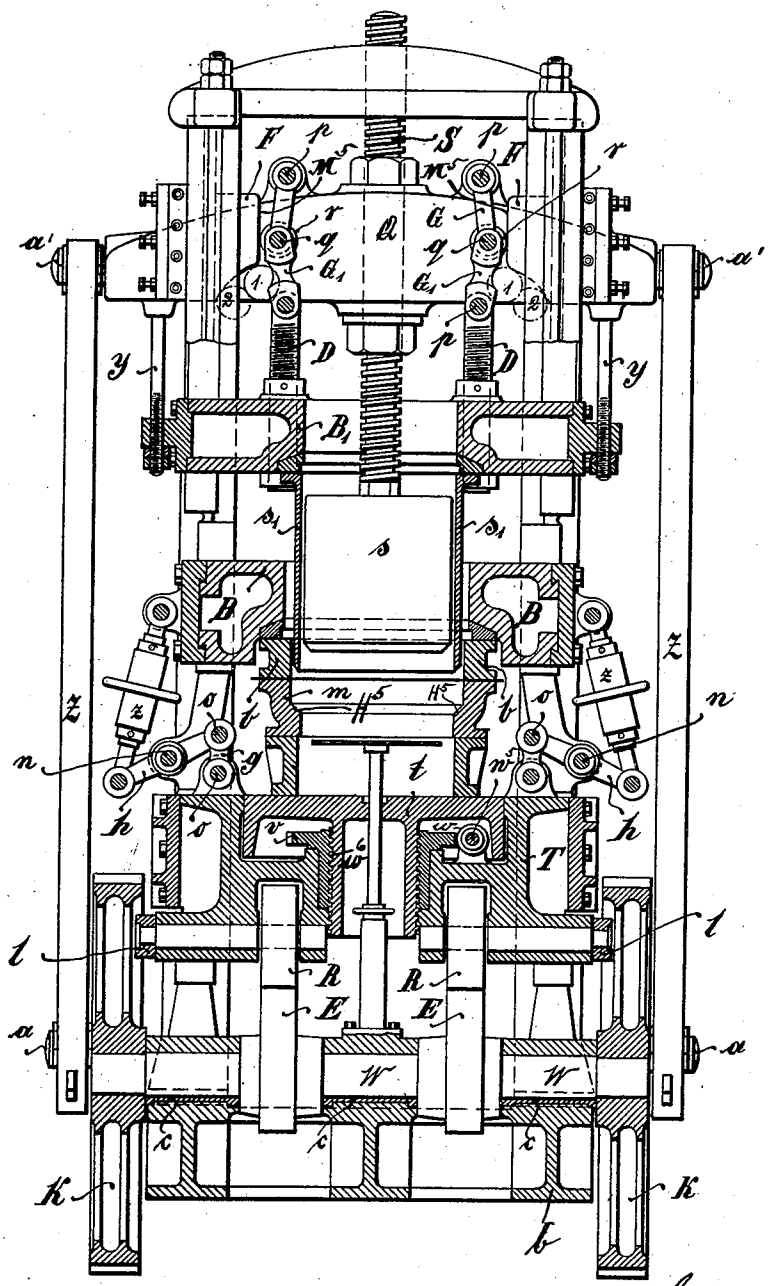
W. LANGBEIN.

DRAW PRESS.

(Application filed Apr. 1, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1



Witnesses:-
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Herbert C Bolwell

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By his Attorneys
Wheatley & Mackenzie.

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

No. 711,926. Patented Oct. 21, 1902.

W. LANGBEIN.

DRAW PRESS.

(Application filed Apr. 1, 1902.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2

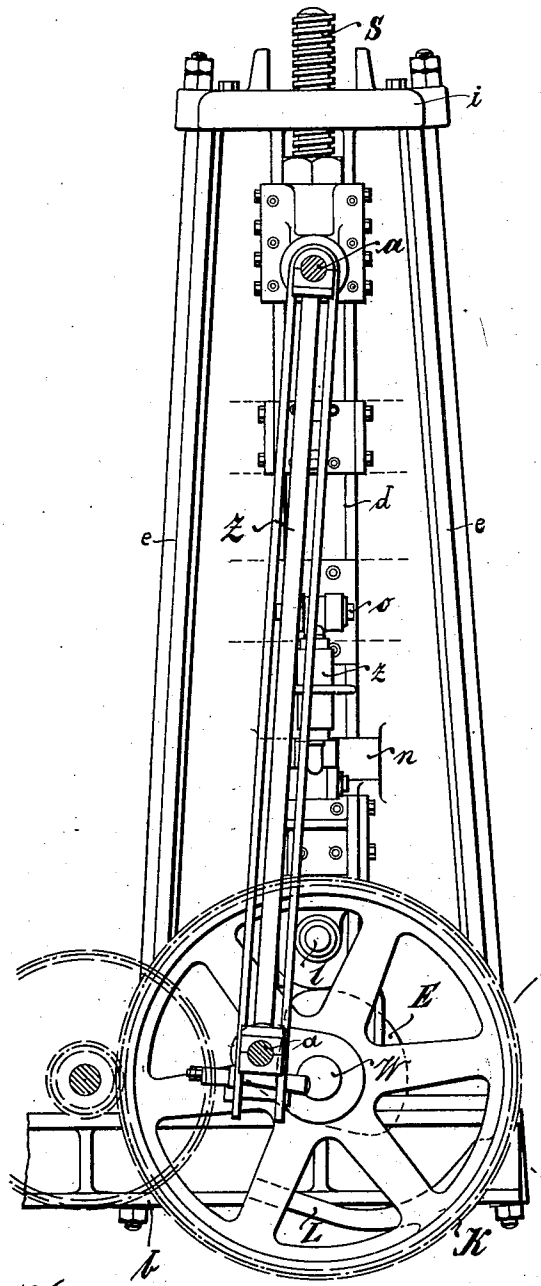
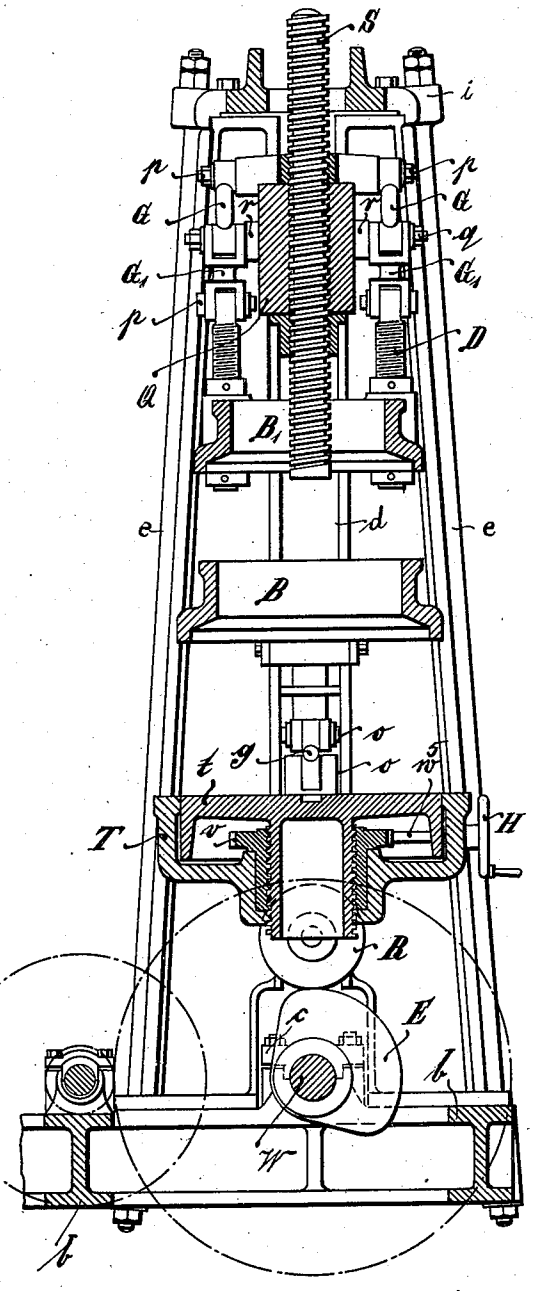


Fig. 3



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UNITED STATES PATENT OFFICE.

WILHELM LANGBEIN, OF DÖTTENDORF, NEAR BONN, GERMANY.

DRAW-PRESS.

SPECIFICATION forming part of Letters Patent No. 711,926, dated October 21, 1902.

Application filed April 1, 1902. Serial No. 100,971. (No model.)

To all whom it may concern:

Be it known that I, WILHELM LANGBEIN, a subject of the Emperor of Germany, whose post-office address is Döttendorf, near Bonn, in the Empire of Germany, have invented certain new and useful Improvements in Draw-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to draw-presses wherein the work-table and the metal-holder are coupled together and held in that position during the entire drawing process.

In the present instance the improvements are shown in combination with a draw-press with inner and outer stamps.

A machine of the kind is illustrated in the accompanying drawings, wherein—

Figure 1 is a front sectional elevation of the machine. Fig. 2 is a side view, and Fig. 3 a vertical transverse section.

The whole machine rests on a frame *b*, on which the bearing *c* for the main shaft W is mounted. The frame *b* likewise supports the uprights *d*, which serve as guides for the metal-holder B. These uprights are also supported by vertical pieces *e* and cross-pieces *i*. The table T is supported by the eccentrics E and is moved upward thereby. In the table T the plate *t*, which supports the matrix, is guided. The upward-and-downward motion of the cross-head Q, which carries the stamp *s*, is effected by means of the connecting-rods Z, the lower ends of which are keyed to the crank-pins *a* of the wheels K and the upper ends to the pins *a'* of the cross-head Q.

All movements of the machine, adjustment of the metal-holder and of the matrix, and the movement of the stamps are effected through the main shaft, which is rotated by means of wheel-gearing, the former operation being effected by means of the eccentrics E and the latter by means of the connecting-rods Z.

The table T, actuated by eccentrics E and rollers R and guided between the uprights *d*, Figs. 2 and 3, is connected by rods *z*, lever *h*, links *g*, and bolts *n* and *o* with the metal-holder B, likewise guided between the uprights *d*. For precisely adjusting the matrix *m* against the metal-holder B and putting these parts and the sheet-metal disk under the requisite tension the contrivance shown in Figs. 1 and 3 for adjusting the plate *t*, which is guided in the table T and on which the matrix is fixed, is employed. The adjustment is effected by means of a screw-nut *v*, engaging a threaded shank or stem w^6 on the plate *t*, and with the indented upper edge of which nut *v* a worm *w* on worm-shaft w^5 engages. Accordingly as the hand-wheel H, seated on the worm-shaft w^5, is turned the plate *t* is moved upward or downward and the matrix adjusted, so that the sheet metal can be fixed under great or slight tension.

If the table T be raised by the eccentrics E, the resulting motion of the table will cause a corresponding movement of the levers *h*, which are pivoted on the bolts *n*, and the sheet-metal holder B, connected with the levers *h*, will be lowered until it has reached its lowest position, when the table is at its highest level, and thereby hold the piece of work in a suitable manner. This position is illustrated in Fig. 1. The table T and the holder B, firmly connected therewith, now lie on the radially-running surface of the eccentrics E, and the work of the die, and therewith the actual drawing, can begin.

As already mentioned, in this case two dies are provided, which have nothing to do with the actual invention and are only referred to in order to make the matter clearer. As is known, they serve for enabling graduated vessels to be drawn with a single throw of the crank.

s is the inner die, and *s'* the outer die. Both are so connected to the cross-head Q that they move therewith. The die *s* is fixed directly on the threaded spindle S, while die *s'* is linked to a sheet-metal guide-holder B', and this latter, with the assistance of pressing-rods D, is connected to the links G and G' by means of bolts *p* and *q*.

If the cross-head Q be raised by means of the shaft W and connecting-rods Z, the outer stamp *s'* begins to work until it comes onto the "gradation" or inclined surface H^5 of the matrix. The inner die now begins to work and completes the vessel, the outer die *s'* acting as a metal-holder, pressing the metal firmly against the surface H^5 of the matrix *m*. In

order to effect this and to lower the cross-head Q still farther, the links G G′ are attached to the latter. These links slide with rollers *r* on the straight surfaces M⁵ of the guide-pieces F while the outer die is working, but as soon as the die *s*′ lies on the inclined surface H⁵ move onto the oblique surfaces of the guides F and take the positions 1 2. (Indicated in dotted lines.) Thus while the work is now completed by the stamp *s* the outer stamp performs no further work and serves simply as a metal-holder until the drawing operation is ended.

When the drawing operation is completed, the parts which are moved again resume the positions necessary for removing the stamped-out vessel and for introducing a fresh sheet-metal disk. The raising of the cross-head Q is effected by the draw-rods Z, the metal guide-holder B′ being raised by draw-rods *y*.

The table T, matrix *m*, and metal-holder B, together with the drawing implements, are returned to their starting positions by means of the rollers *l*, arranged on the table T and which run on curved pieces L in connection with the wheels K, Fig. 2.

What I claim is—

1. In a machine of the character described, the combination with a vertically-movable work-table and a vertically-movable metal-holder arranged above said work-table, of mechanism intermediate of and connecting the work-table and metal-holder, said mechanism being adapted to cause the metal-holder to be lowered simultaneously with and toward the work-table when the latter is raised and simultaneously with but away from said work-table when the latter is lowered, a vertically-movable cross-head, a die carried thereby, a main operating-shaft, eccentrics thereon, rollers on the work-table against which rollers said eccentrics bear, crank-wheels on said shaft, connecting-rods Z pivotally connected at one end to the crank-pins of said wheels and at the other end to the cross-head, a guide-holder B′, a die carried thereby, rods connecting said holder to the cross-head, and rods D and links G, G′ connecting the holder B′ to the cross-head, in the manner described.

2. In a machine of the character described, the combination with a vertically-movable work-table and a vertically-movable metal-holder arranged above said work-table, of mechanism intermediate of and connecting the work-table and metal-holder, said mechanism being adapted to cause the metal-holder to be lowered simultaneously with and toward the work-table when the latter is raised and simultaneously with but away from said work-table when the latter is lowered, a vertically-movable cross-head, a die carried thereby, a main operating-shaft, eccentrics thereon, rollers on the work-table against which rollers said eccentrics bear, crank-wheels on said shaft, connecting-rods Z pivotally connected at one end to the crank-pins of said wheels and at the other end to the cross-head, rollers *l*, carried by the work-table, and curved pieces L carried by the crank-wheels, as and for the purpose specified.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILH. LANGBEIN.

Witnesses:

WALTER BECKER,

FRITZ HENNICKE.