

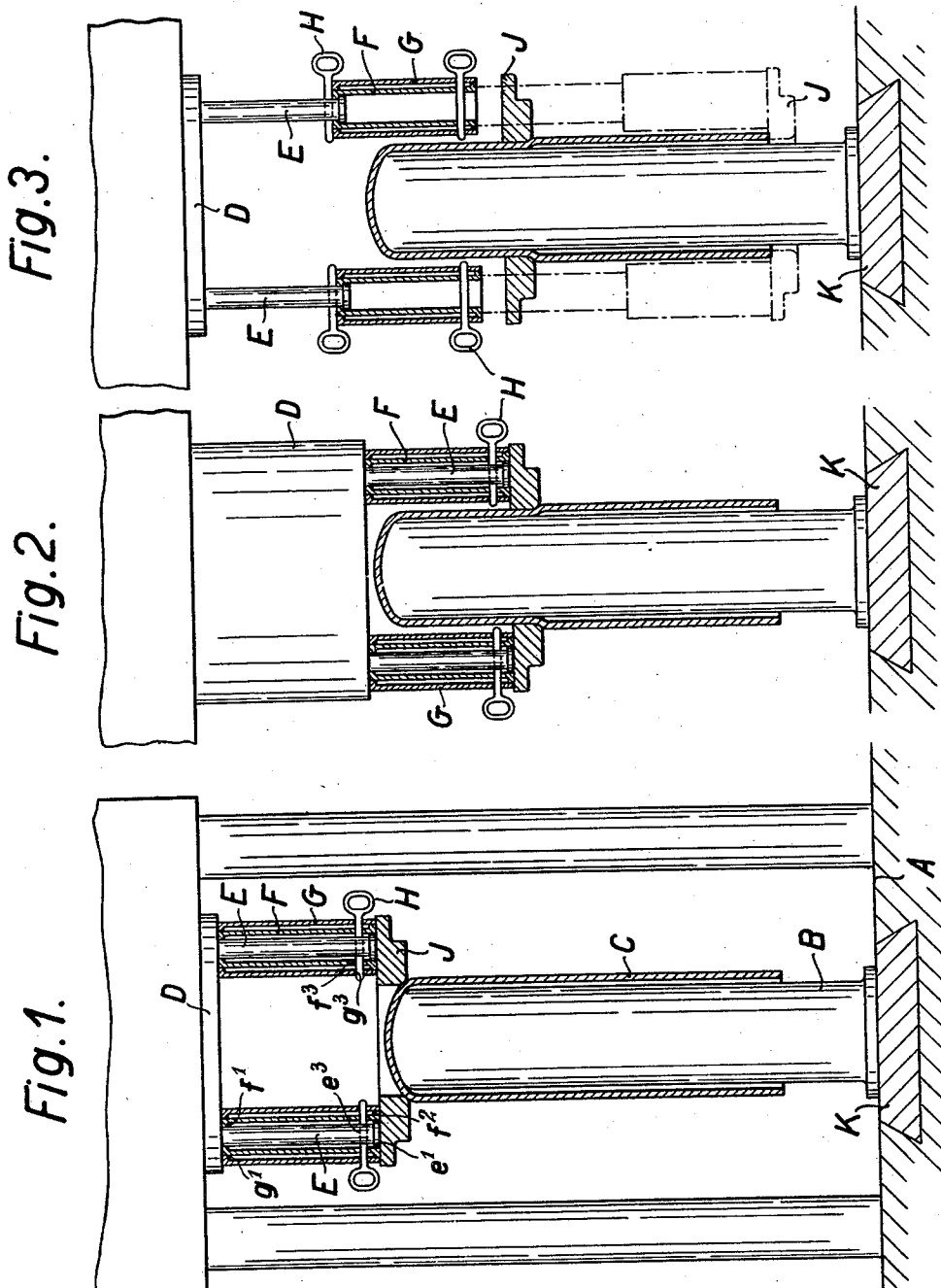
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DRAWING PRESS

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DRAWING PRESS

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The invention relates to presses intended for drawing hollow bodies and has for its object so to improve presses of this class that with a given distance between the working table of the press and the press cylinder comparatively long work pieces can be drawn and that further under certain circumstances the stroke of the press plunger can be reduced.

The greatest length of a hollow work piece which can be manufactured by means of an ordinary press and, which is drawn by means of a drawing die over a mandrel mounted on the working table of the press, is about equal to one third of the above-indicated distance. For, one third of this distance is claimed by the mandrel, one third by the finished work piece which has to be withdrawn from the mandrel and removed aside, while the distance between the drawing die and the lower surface of the stamp or cross head comprises the last third, unless the cross head has an aperture above the drawing die, as care must be taken that in the course of the drawing operation the press stamp or cross head does not hit the work piece.

With presses the working table of which can be run out aside or which have an equivalent appliance enabling the removal of the mandrel aside, the length of the finished work piece can be equal to half the above distance, since the work piece can be put on or withdrawn from the mandrel while the latter is in run-out position. The invention is of particular importance for big drawing presses, as it permits the reduction of the structural height of a press, which feature is of advantage in so far as every increase of the structural height of a big press necessitates an increased height of the hall, crane bridge and so on.

The invention consists in the fact that the drawing die can be fixed in different positions in the direction of the stroke on that of the two members of the press, viz. the working table and the stamp, to which it is attached. In a drawing press equipped with such a differently adjustable drawing die, the distance between the die and the lower surface of the stamp need no longer be equal to the length

of the finished drawn work piece, but can be notably shorter.

In order that the invention may be more readily understood, an embodiment of the same is illustrated by way of example in the accompanying drawing in which a vertical drawing press is shown in Figures 1 to 3 in three subsequent working stages during the drawing of a hollow body.

Referring to this drawing, A denotes the working table of the press on which is removably mounted a mandrel B on which the hollow work piece C to be drawn is slid. Means are provided for removing the mandrel aside out of working position. To this end the mandrel may for instance be mounted on a supporting plate K which can be shifted laterally on the working table A together with the mandrel B. D is the press stamp which possesses two downward extensions E, E'. On each of the extensions E is longitudinally shiftably mounted a tubular piece F which in its turn carries another tubular piece G that is likewise shiftable thereon. As will be seen, these two nested tubular pieces F, G can be lowered telescopically until an internal flange f^1 provided on piece F abuts on an external flange e^1 provided on the lower end of extension E and, respectively, an internal flange g^1 provided on the upper end of piece G abuts on an external flange f^2 provided on the lower end of piece F. The extensions E and the tubular pieces F, G have bores e^2 , f^2 , g^2 through which bolts H can be slid so that the tubular pieces F, G are fixed in their upper or lower mutual limit positions. J denotes the drawing die which is not in connection with the members E, F, G.

The described drawing press operates as follows:

At the beginning of a drawing operation the members E, F, G are in nested position, as illustrated in Figure 1. The mandrel B with the work piece C thereon and the drawing die J on top of the latter is slid under the press and thereupon the work piece C is drawn to about one third of its length by a first stroke Figure 2. Thereupon the stamp D is retired to its upper limit position and the tubular pieces F, G are lowered in unison

and fixed in position relatively to their respective extensions E by the bolts H, Figure 3, whereupon the second stroke is made. This done, the stamp D is retired again and merely the pieces G are lowered and fixed in lower position on their pieces F by the bolts H. Thereupon the third and last stroke is executed, as marked in chain-dotted lines in Figure 3, at the end of which stroke the drawing die J drops from the work piece C. The tubular pieces F, G are then retired to the initial position shown in Figure 1, so that the mandrel B with the finished work piece C and the die J thereon can be removed aside. It may still be noted that the extensions and intermediate tubular pieces may be designed and connected to the stamp D in any other suitable way, for instance they may be applied hingedly thereto so as to be laterally swung into and out of operative position.

What I claim as my invention is:—

1. A large vertical machine press for the drawing of hollow bodies, comprising two vertically disposed cooperable members, one of said members adapted to receive the hollow body to be drawn, means for relatively reciprocating said members, a drawing die, and means for mounting said die on one of said members so that it can be adjusted in the direction of said reciprocation.

2. A large vertical machine press for the drawing of hollow bodies, comprising two vertically disposed cooperable members, one of said members adapted to receive the hollow body to be drawn, means for relatively reciprocating said members, a drawing die, and means for adjusting said die upon one of said members for the extent of substantially one or more strokes of said reciprocation.

3. A large vertical machine press for the drawing of hollow bodies, comprising two vertically disposed cooperable members, one of said members consisting of a mandrel adapted to receive the hollow body to be drawn, means for relatively reciprocating said members, a drawing die, and means for successively adjusting said die upon said mandrel from its end toward its base the extent of said reciprocation.

4. The combination claimed in claim 1 wherein said last mentioned means comprises an intermediate extension fixed to one of said members and disposed between the same and the drawing die.

5. The combination claimed in claim 1 wherein said last mentioned means comprises an intermediate extension movably fixed to one of said members and disposed between the same and the drawing die.

6. The combination claimed in claim 1 wherein said last mentioned means comprises a plurality of telescopically fitted extensions fixed to one of said members, and locking

means retaining said extensions in their fitted positions.

7. The combination claimed in claim 1 wherein said last mentioned means comprises an intermediate extension fixed to one of said members and disposed between the same and the drawing die, an outwardly directed annular projection at the extremity of said extension, a second extension telescopically arranged over said first extension, an inwardly directed annular projection at the top end of said extension adapted to cooperate with said first mentioned projection in the extended position of said extensions, and locking means to retain said extensions in their folded and extended positions.

The foregoing specification signed at Cologne, Germany, this 23rd day of December, 1930.

KARL BÖHLE.