(No Model.)

J. M. SEYMOUR.

DIE PRESS CONNECTING ROD.

No. 287,333. Patented Oct. 23, 1883.

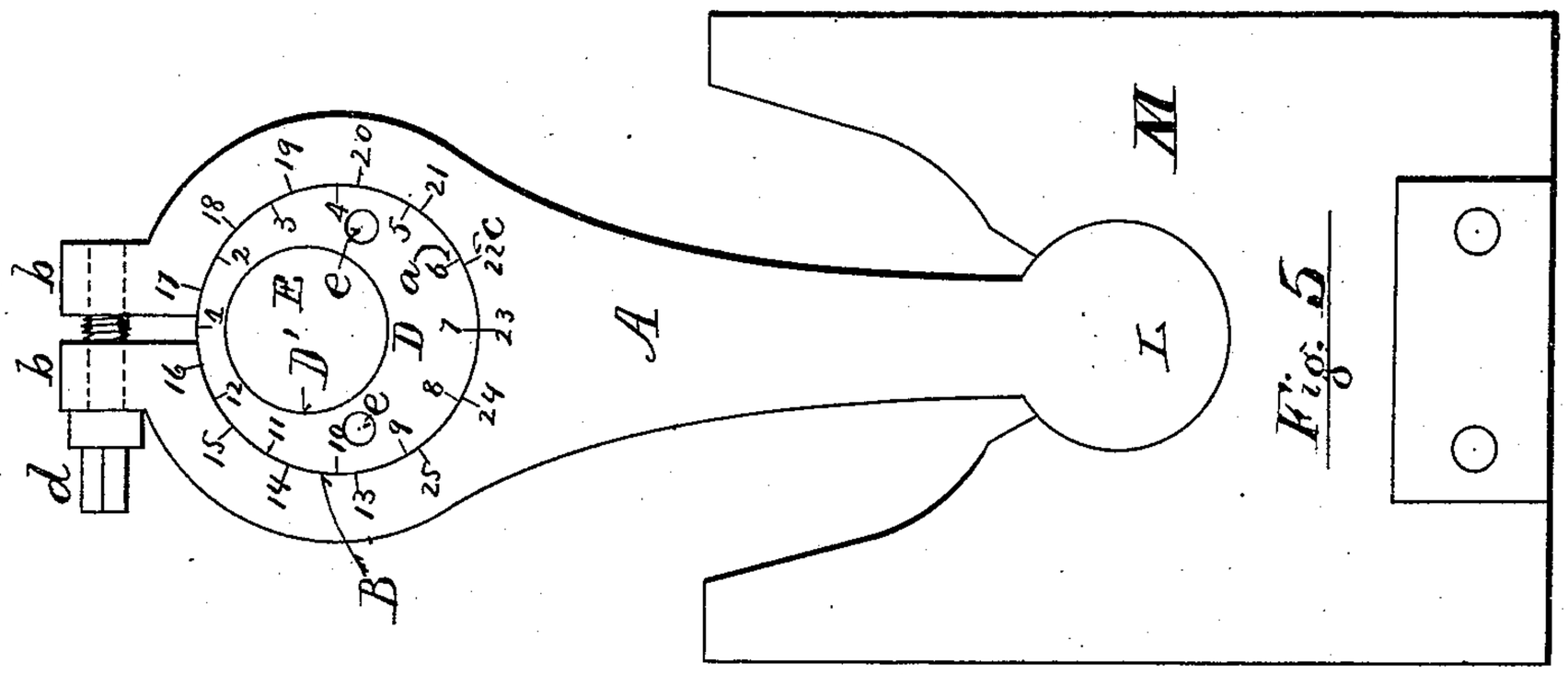

Fig. 5

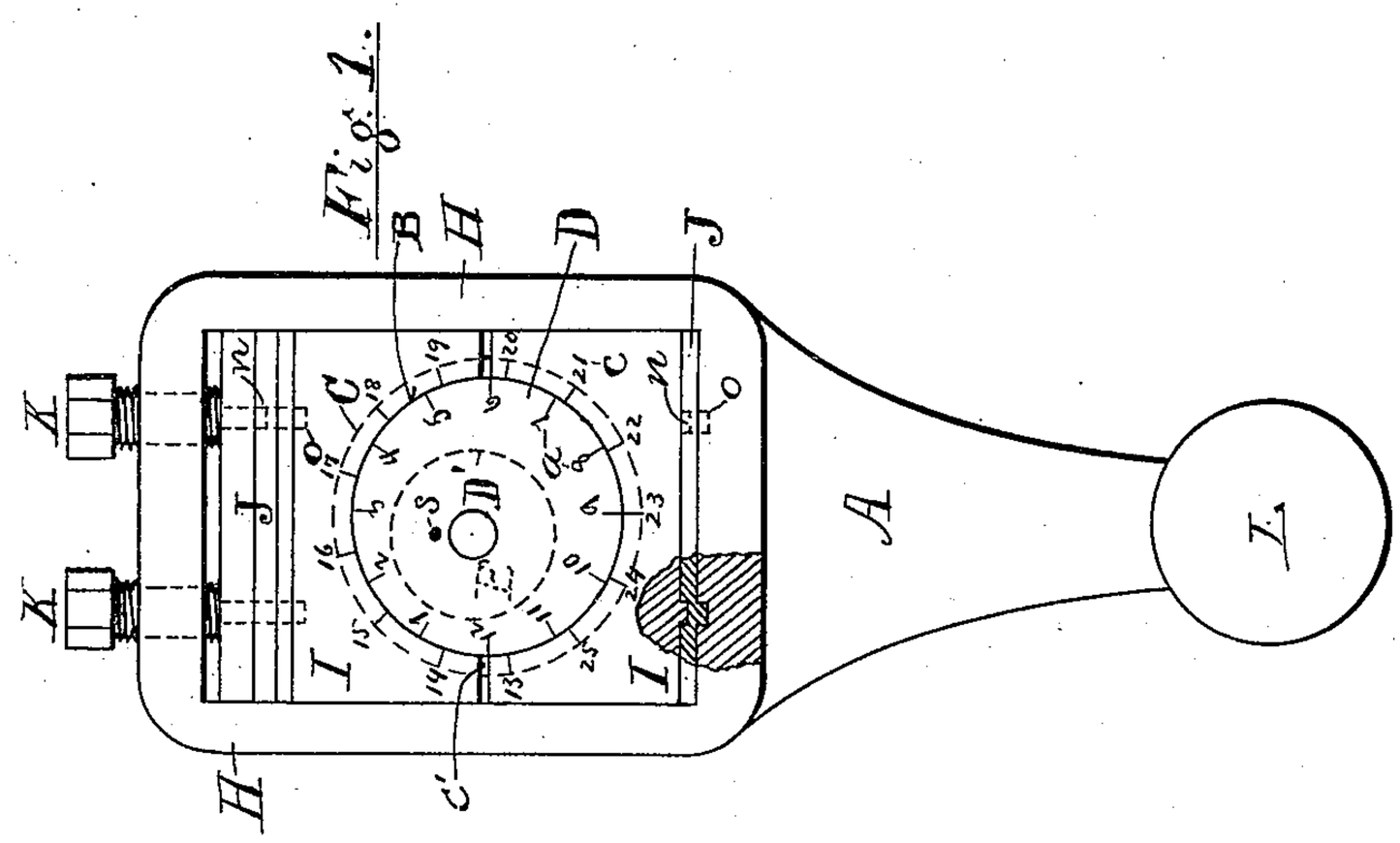

Fig. 1.

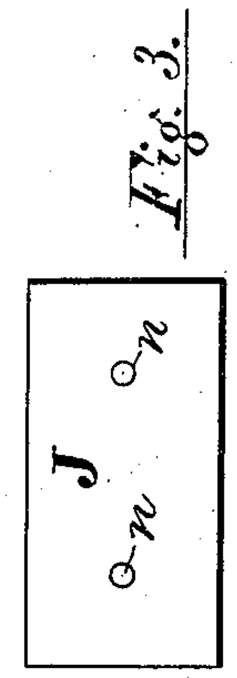

Fig. 3.

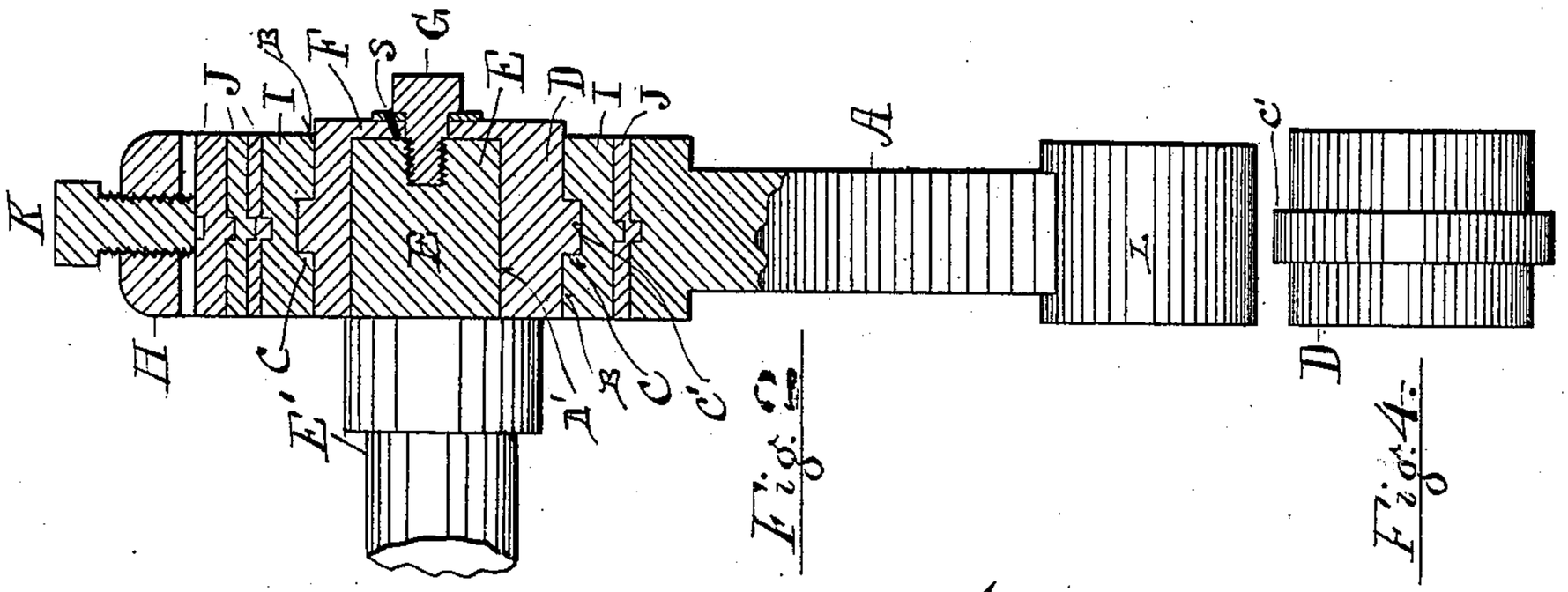

Fig. 2.

Fig. 4.

Attest:

Mc. V. Smith

Aug. Jordan

Inventor.

Jas. M. Seymour per

R. D. O. Smith his atty

UNITED STATES PATENT OFFICE.

JAMES M. SEYMOUR, OF NEWARK, NEW JERSEY.

DIE-PRESS CONNECTING-ROD.

SPECIFICATION forming part of Letters Patent No. 287,333, dated October 23, 1883.

Application filed April 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. SEYMOUR, a citizen of the United States, residing in Newark, New Jersey, have invented certain new and useful Improvements in Differential Scale-Adjustments Applied to Press Connecting-Rods, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

In my patent granted April 24, 1883, I have described a method of adjusting the connecting-rod of a power-press to adapt it to the reception of punch and dies of different thicknesses by means of a disk eccentric to the axis of the crank-pin, and interposed between it and the connecting-rod, so that by rotating said disk the distance between said crank-pin axis and the extremity of said rod may be varied by very minute quantities, which may be measured with accuracy by the differential scales which form the principal subject of said patent. In said patent the adjusting-disk is secured and held in position by a pin inserted in one pair of holes belonging to concentric and differential series, and it follows that with the arrangement described the smallest adjustment possible is the differential distance intervening between the holes of said series. To obviate the disadvantage of this limitation, as well as to avoid the mechanical disadvantage of removing and replacing a small detached pin, I herein propose to substitute a friction-clamp for said pin, whereby there is no limitation as to adjustability, and no liability to loss or wear of the detachable portion.

My improvement is adapted for application to many varieties of presses.

My invention also includes a method, by means of transposable packing-plates, of obtaining an approximate adjustment independent of the eccentric rotating disk, whereby the adjustment of the connecting-rod may be made over a much larger range than would be possible with said disk alone.

Figure 1 is a form of connecting-rod having a divided rectangular block, I, fitted to a frame, H, formed upon the upper end of the rod, the block being fitted with an adjusting-disk, D, and packing-plates J. Fig. 2 is a vertical section of the same through the crank-pin. Fig. 3 is a detached plan of one of the plates J, and Fig. 4 is an edge view of the adjusting-disk shown in Figs. 1 and 2. Fig. 5 is a front view of a modification, showing a cross-head, M, provided with a connecting-rod, A, having an adjusting-disk, D, inserted in a divided ring and clamped by drawing together the ends of said ring.

A is the connecting-rod; B, a circular recess formed in one end thereof to receive a circular adjustable disk, D, which has a bearing, D′, formed eccentrically therein to receive the operative crank-pin E.

C is a groove formed in the inner side of the recess B, and C′ a tongue or annular rib formed on the exterior of the disk D to fit said groove.

E is the crank-pin, formed eccentrically upon the driving-shaft E′, which latter is common to power-presses of the kind to which my improvements are adapted.

To prevent the escape of lubricating-oil at the front end of the bearing D′ it is tightly covered by a cap, as at F, preferably made integral with the disk D, though it is evident a separable plate may be attached to the disk D with a joint sufficiently tight to prevent an escape of oil.

G is a bolt inserted through said cap into the center of the crank-pin to retain the parts in proper working relation.

H is a frame formed about a rectangular mortise in the head of a connecting-rod to receive a divided clamping-block, I, which block is formed with a recess, B, to receive an adjusting-disk, D.

J J are transferable packing-plates, applied to the end of the block I, inside the frame H, to vary the length of the rod when the adjustment afforded by the disk D is inadequate.

K K are set-screws for clamping the block and plates inside the frame. Such clamping effect may be obtained by applying frictional pressure to the disk at any point; but a divided block, as in Fig. 10, or strap, as in Fig. 5, operates more effectually, because the frictional pressure is then distributed over the entire surface of the disk. In Figs. 1 and 2 the block I is movable in the frame H, formed at one end of the connecting-rod, and, being

split at one or both sides, is capable of compressing and holding the disk firmly under the pressure of the screws K, inserted through the upper end of the frame. The block is also shown provided with the removable packing-plates J, one or more of which may be placed between the block I and the end of the seat or frame, to lengthen or shorten the connecting-rod and produce an approximate adjustment of the same when the turning of the disk in the recess proves insufficient. When this approximate adjustment has been produced, it is made exact by turning the disk. The plates are shown provided upon one side with short dowel-pins *n*, and upon the other side with holes *o* to fit such pins. The bottom of the slot and top of the block are provided with similar holes, and the bottom of the block with such pins, for the purpose of retaining the plates and the block in their places in the frame H when in use.

When the plates are not required to lengthen the rod, they may be stored at the upper end of the block, and held in place by the pins *n* and set-screws K, as shown in the drawings.

In the section in Fig. 2 the crank-pin bearing D′ is shown closed at the front end by a plate, F, for retaining the oil in the bearing, and preventing it from disfiguring the front of the connecting-rod.

The plate is provided with an oil-hole, S, through which the bearing can be oiled. The disk is also made to hold the connecting-rod in place by means of the rib C′, formed on the disk and fitted to the groove C inside the recess B. Such a rib permits the rotation of the disk during adjustment, but prevents any derangement endwise.

L is the lower end of the connecting-rod, secured in the cross-head M by a circular socket, (shown in Fig. 5,) and as is common, and *a c* are the indicating marks or scales applied to the disk D and the margin of the recess B, into which it is fitted. In Fig. 5, a part wherein the recess B is formed is split at one side of the recess and provided with lugs *b* and a clamping-screw, *d*, by which the disk can be firmly clamped in the recess, and *e e* are holes formed in the face of the disk to apply a suitable wrench for turning it. When thus turned into the desired position, it will be seen from the above description that my present invention enables me to dispense with the locking pin and holes at first used with my circular differential scales; that it affords a means for adjusting the disk D to any point in its rotation, and holding it firmly in its adjustment; also means for retaining the oil in the front end of the crank-pin bearing; and that when the adjustment secured by the eccentric disk is insufficient it provides a means of lengthening or shortening the rod by moving the eccentric disk, bodily, to or from the opposite end of the rod. Having shown the way this is done by packing-plates, it is obvious that any desired number and thickness of such plates may be used, and any arrangement of the same made by the operator. It is also obvious that the oil-retaining plate F may be used upon the sliding block employed in the slotted cross-head of many power-presses, as the crank-pin of such presses rotates in the bearing in the block in a similar manner, and is equally liable to have the oil run out at the front thereof. But the oil-retaining plate F may be used apart from the adjusting-disk by forming the bearing D′ directly in either the connecting-rod or in the oscillating block used with slotted cross-heads. The oil-hole S may also be made at the upper edge of the bearing D′. I have therefore claimed the oil-retaining device independently of the disk, as its use is not dependent thereon.

It is obvious that the top of the frame H may be closed by a straight bar or strap having a bolt at each end to press it against the divided block in the place of the set-screw K, and I do not therefore limit myself to the precise construction shown.

Having thus described my invention, I claim the same as follows:

1. A press stamp or connecting rod provided with an adjusting-disk having an eccentric bearing formed therein, whereby the effective length of said rod may be varied, and differential concentric scales inscribed upon said disk and the surrounding part in which it turns, whereby said changes of adjustment may be ascertained and determined, and a surface-friction clamp for said disk, whereby the same may be adjusted and held at any point without restriction, substantially as set forth.

2. The combination, in a press connecting-rod, of the frame H, the divided block I, having the recess B and groove C formed therein, the adjustable disk D, formed with tongue to fit the groove, and provided with the eccentric bearing D′, and means, substantially as set forth, for clamping the disk by friction into the recess.

3. The combination, with the crank-pin E, of the crank-pin bearing B′, tightly closed at its front end to escape of oil, and provided with a hole to permit the introduction of oil at the front end of said bearing, substantially as and for the purpose set forth.

4. The combination, in a press connecting-rod, of the frame H, the divided block I, formed with the recess B, the adjustable disk having an eccentric bearing formed therein, one or more removable interlocking plates J, and means, substantially as described, for clamping the block and plates into the frame, as and for the purposes set forth.

5. The combination, in a press-connection, of the crank-pin E, the bearing-box wherein said crank-pin may revolve, provided with the oil-retaining plate F, integral with disk D, as described, and the screw G, inserted through

the plate into the crank-pin, as and for the purpose set forth.

6. The combination, in a press connecting-rod, of the frame H, the divided block I, formed with the recess B, the adjustable disk having an eccentric bearing formed therein, one or more removable interlocking packing-plates, J, and means, substantially as described, for clamping the block and plates into the frame, as and for the purpose set forth.

JAS. M. SEYMOUR.

Witnesses:

R. D. O. SMITH,

J. C. TURNER.