

(No Model.)

3 Sheets—Sheet 1.

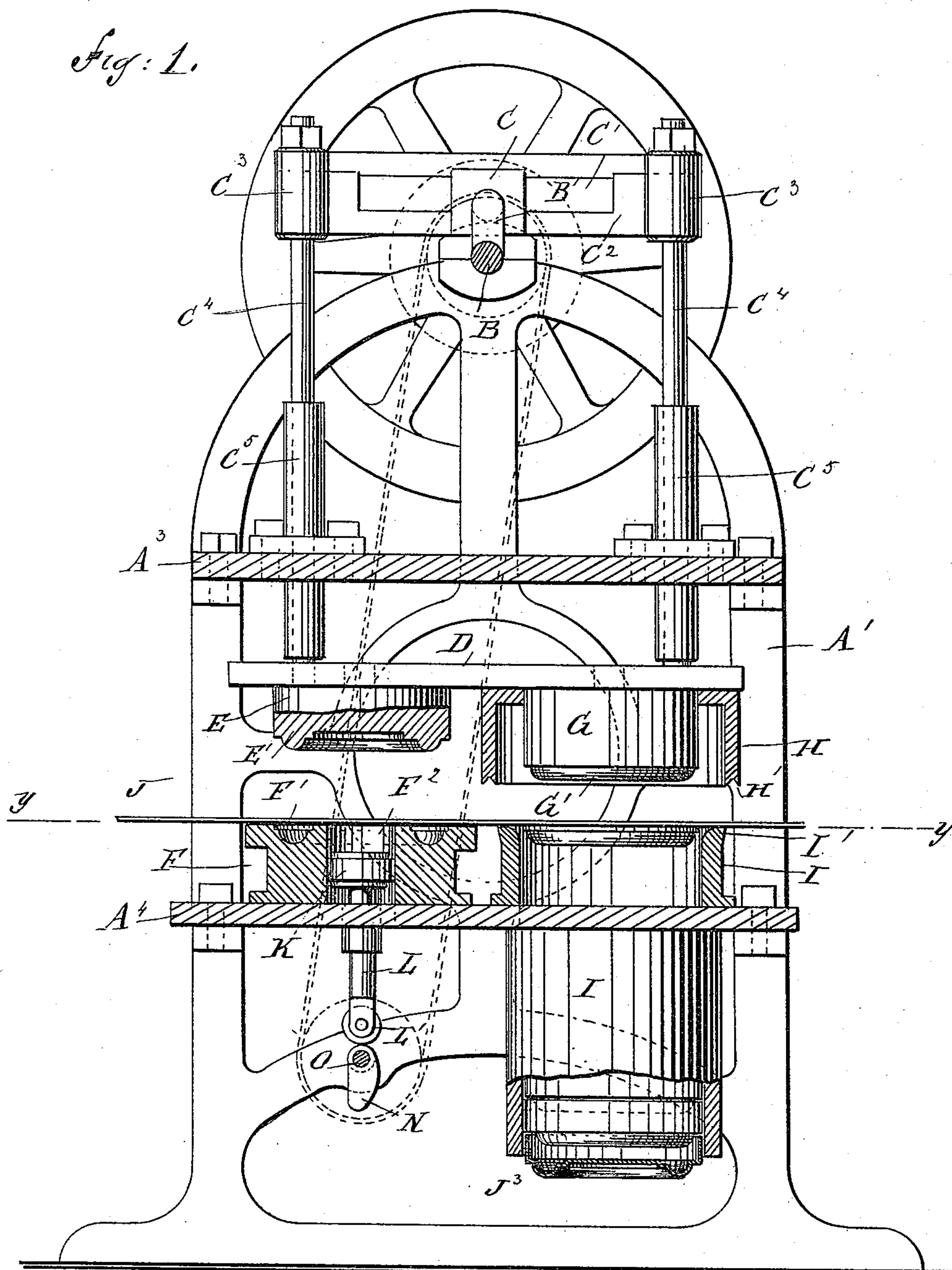
J. MOHS.

# MACHINE FOR AND PROCESS OF MAKING BOXES.

No. 441,105.

Patented Nov. 18, 1890.

Fig: 1.



WITNESSES:

**INVENTOR:**

Enas. Kida  
C. Sedgwick

B)

INVENTOR:  
*J. Mohs*  
*Munn & Co.*  
ATTORNEYS.

**ATTORNEYS.**

(No Model.)

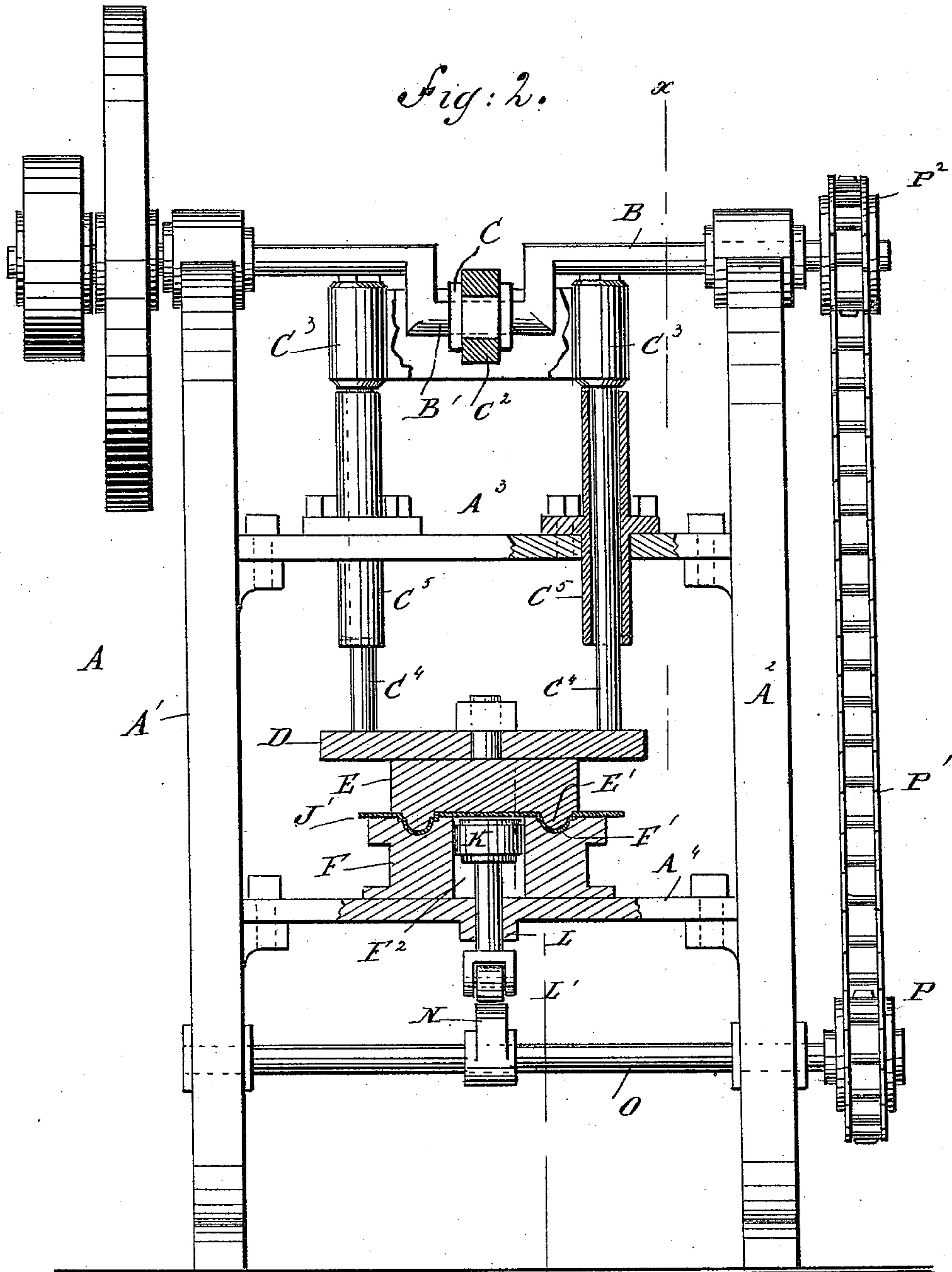
3 Sheets—Sheet 2.

J. MOHS.

MACHINE FOR AND PROCESS OF MAKING BOXES.

No. 441,105.

Patented Nov. 18, 1890.



WITNESSES:

*Chas. Viola*  
*C. Sedgwick*

INVENTOR:

*J. Mohs*  
BY *Munn & Co*  
ATTORNEYS.



(No Model.)

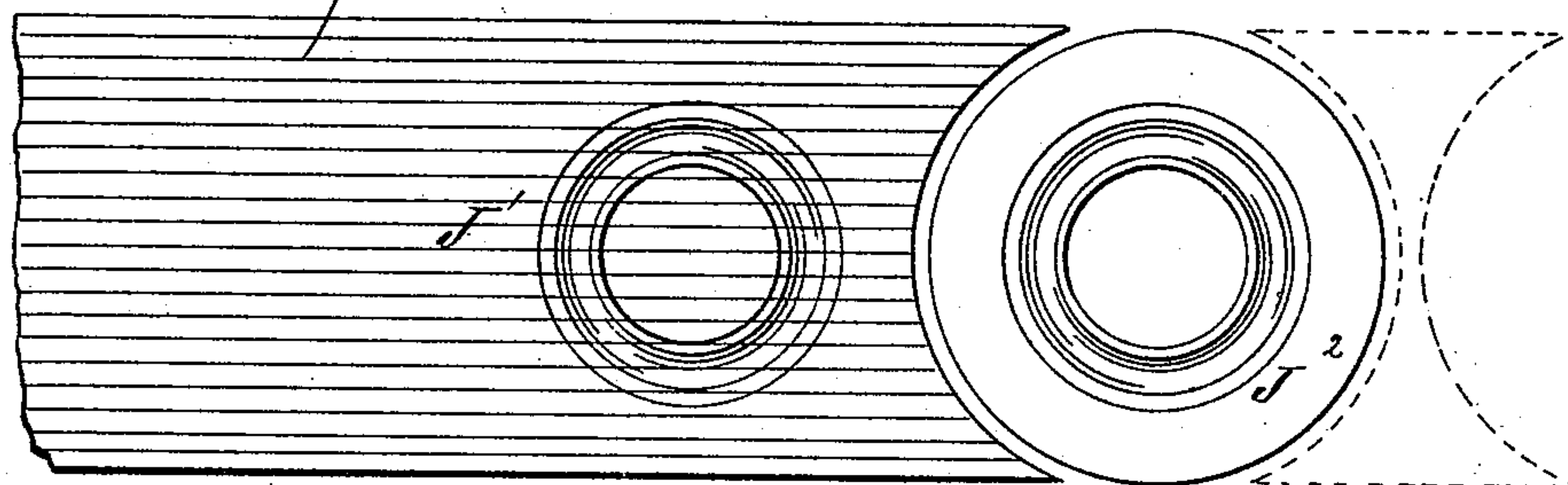
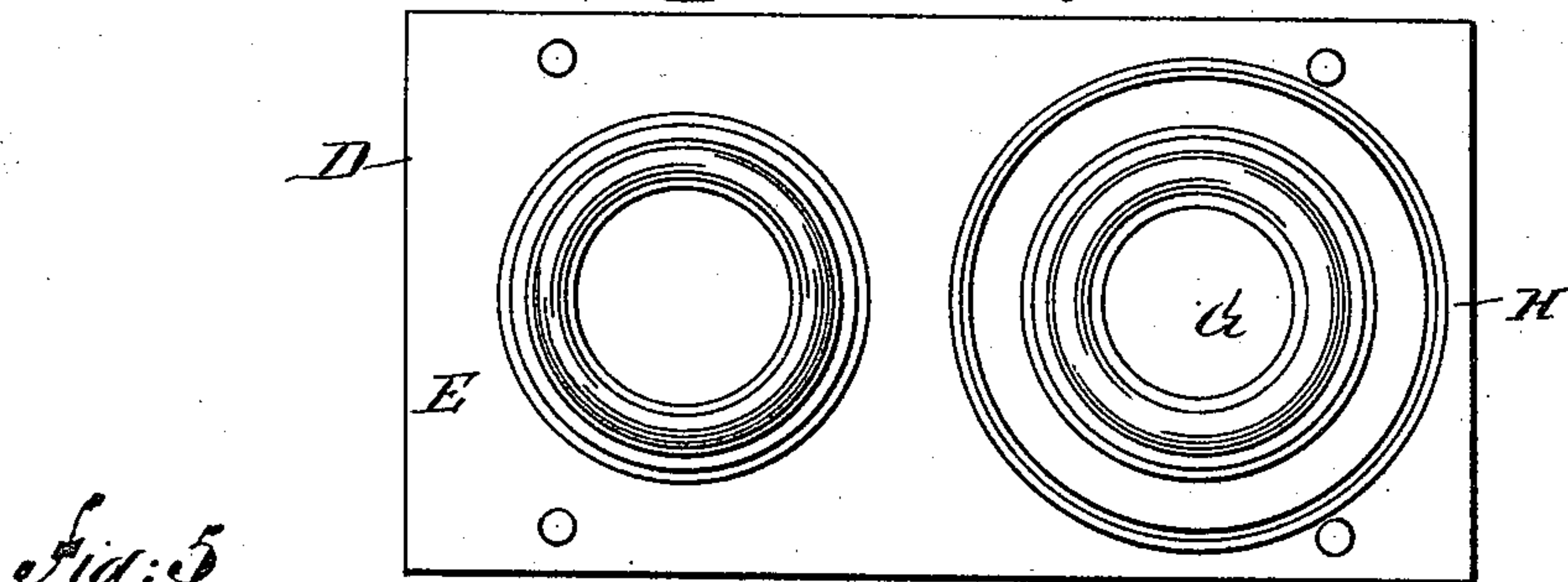
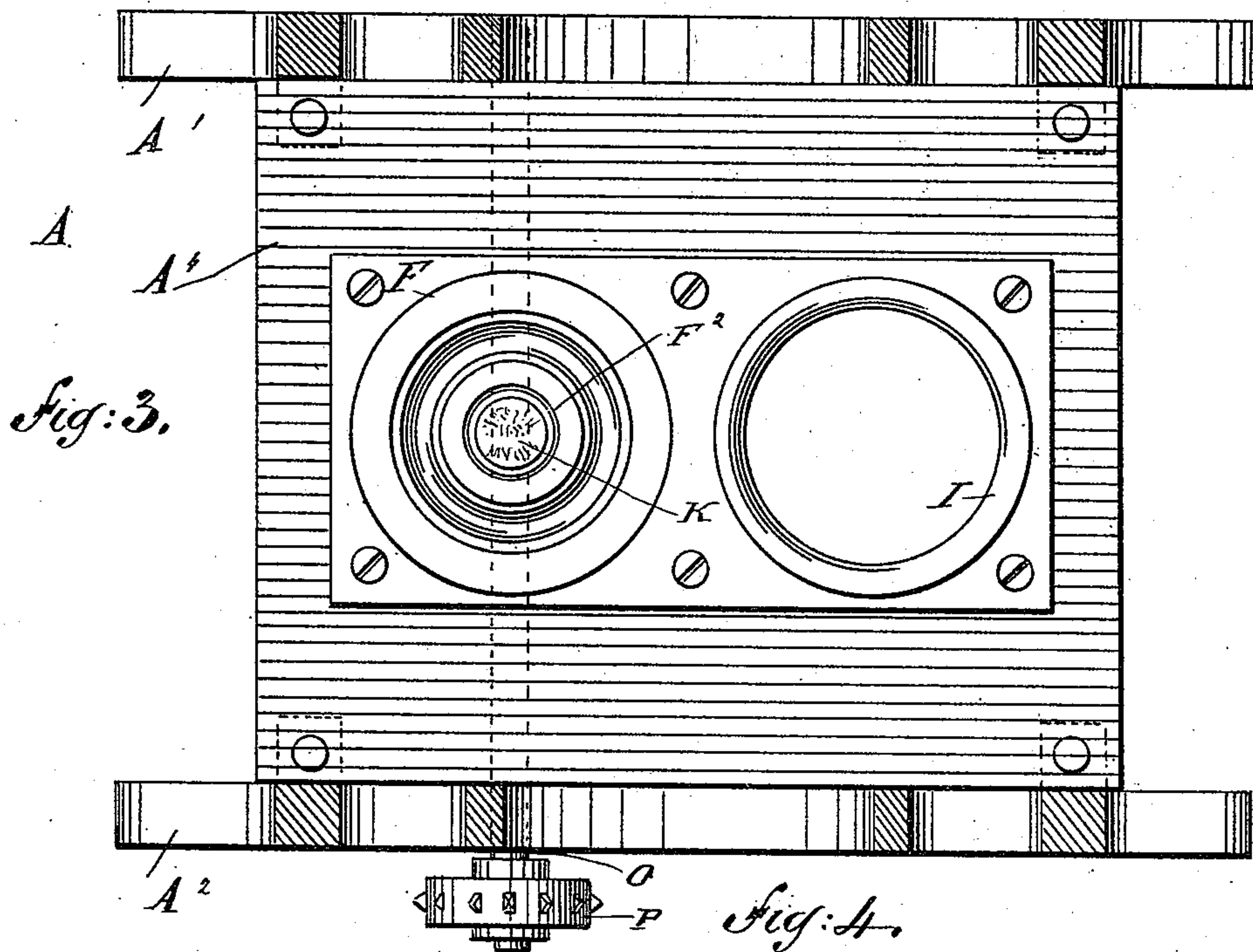
3 Sheets—Sheet 3.

J. MOHS.

MACHINE FOR AND PROCESS OF MAKING BOXES.

No. 441,105.

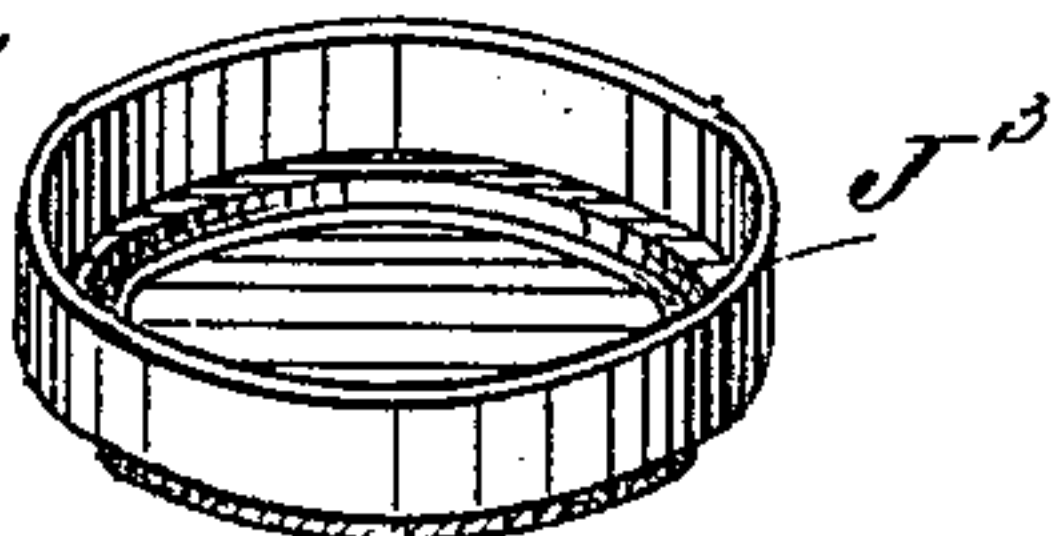
Patented Nov. 18, 1890.



WITNESSES:

*Chas. Nida*  
*C. Sedgwick*

*Fig: 6.*



INVENTOR:

*J. Mohs*  
BY *Munn & Co*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JULIUS MOHS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO MAX  
ESCHENBEK, OF SAME PLACE.

## MACHINE FOR AND PROCESS OF MAKING BOXES.

SPECIFICATION forming part of Letters Patent No. 441,105, dated November 18, 1890.

Application filed January 31, 1889. Serial No. 298,291. (No model.) Patented in Germany August 28, 1888, No. 47,318, and in France January 25, 1889, No. 195,624.

*To all whom it may concern:*

Be it known that I, JULIUS MOHS, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented an Improvement in Machines for and Processes of Making Boxes, (for which Letters Patent were granted to me in Germany, No. 47,318, dated August 28, 1888, and in France, No. 195,624, dated January 25, 1889,) of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for making round or oval boxes, and which is simple and durable in construction, very effective in operation, and works automatically in stamping out, forming, and embossing boxes of paper, leather, or other suitable material.

My invention consists, essentially, in the method of forming embossed boxes or lids by first embossing the material from which the boxes are to be made and then pressing up the sides of the box. So far as I am informed these steps have heretofore always been carried out simultaneously—that is to say, the die which presses the outer edges of the blank into vertical position also serves to emboss the bottom of the same. The compression of air in the box while being thus formed made it necessary to apply great power to the compressing and embossing head. By my method this difficulty is avoided, and I am enabled to operate the die and plunger for pressing up the box with considerably less power and also to produce a more accurate impression.

My invention also consists in mechanical arrangements for carrying out the above method and in such other features as will be described below and defined in the claims.

Figure 1 is a sectional side elevation of the improvement on the line *xx* of Fig. 2. Fig. 2 is an end elevation of the same with parts broken out and parts in section. Fig. 3 is a sectional plan view of the improvement on the line *yy* of Fig. 1. Fig. 4 is an inverted plan view of the head carrying the mold, the die for embossing, the plunger, and the cutter. Fig. 5 is a plan view of a portion of the material, showing the feed end thereof, having an embossed portion formed thereon, and an embossed blank for forming the box cut

therefrom. Fig. 6 is a perspective view of the finished box.

The improved box-making machine is mounted on a suitably-constructed frame A, comprising the standards A' and A<sup>2</sup>, connected with each other by transverse plates A<sup>3</sup> and A<sup>4</sup>. In the upper ends of the standards A' and A<sup>2</sup> is mounted to turn in suitable bearings the main driving-shaft B, carrying the usual fly-wheel and pulley, of which the latter is connected with suitable machinery for imparting a rotary motion to the main driving-shaft B.

On the shaft B, between the standards A' and A<sup>2</sup>, is formed a crank-arm B', fitted into a sliding box C, mounted to slide in a longitudinally-extending slot C', formed in the yoke C<sup>2</sup>, secured at its ends in the cross-piece C<sup>3</sup>, supporting vertically and downwardly extending rods C<sup>4</sup>, mounted to slide in suitable bearing C<sup>5</sup>, secured on the upper cross-plate A<sup>3</sup> of the frame A.

On the lower ends of the rods C<sup>4</sup> is secured a horizontally-extending plate, forming a head D, supporting on its under side the male die E for embossing the plunger G and the cutter H, which latter surrounds the said plunger G. When the shaft B is rotated, its crank-arm B', acting on the sliding box C, raises and lowers the yoke C<sup>2</sup>, so that the head D, rigidly connected with the said yoke, receives a reciprocating motion. Directly opposite the male die E is located the female die F, secured on the top of the cross-plate A<sup>4</sup> of the frame A. Opposite the plunger G is arranged on the said plate A<sup>4</sup> a mold I, made of cylindrical or oblong form, corresponding to the shape of the plunger G. The male die E is provided on its under surface with offsets E' of any desired form, and similarly-shaped recesses F' are formed in the top of the female die F, so that when the die is moved downward the offsets E' fit into the recesses F'. The tops of the female die F and the mold I are in line with each other, and are adapted to receive the material from which the box is to be made. When the male die E moves downward and the material J is placed over the female die F, said material is pressed into the recesses F' by the offsets E', thus be-



ing embossed at J', as is plainly shown in Figs. 2 and 5. When the head D moves upward, the material J, with its embossed portion J', is moved forward by hand until it rests centrally over the mold I, as is shown in Fig. 1. The latter is provided on its outer upper end with a cutting-edge I', on which acts the sharpened lower edge of the circular or oblong cutter H, surrounding the plunger G. When the reciprocating head D moves downward, the cutting-edge H' of the cutter H cuts the blank J<sup>2</sup> for forming the box J<sup>3</sup> from the material J, and then the plunger G presses the blank J<sup>2</sup> downward into the mold I, so that the outer edge of the blank J<sup>2</sup> is pressed into a vertical position to form the sides of the box between the inner surface of the mold I and the outside of the plunger G. During this operation part of the material J on top of the female die F is again embossed, as previously described, so that when the head D again moves upward the material J is shifted forward, so that the embossed portion J' is again placed over the mold I. On the downward movement of the reciprocating head D a new box is formed, and the former box is pressed downward by the new box into the lower part of the mold I. (See Fig. 1.)

In order to stamp the bottom of the box or the top of the lid, a stamping-plunger K is provided, which operates in a central opening F<sup>2</sup>, formed in the female die F. The plunger K is secured on a rod L, mounted to slide vertically in suitable bearings in the plate A<sup>4</sup>, and carries on its lower end a roller L', operated on by a cam N, secured on a transversely-extending shaft O, mounted to turn in suitable bearings in the lower parts of the standards A' and A<sup>2</sup>.

On one outer end of the shaft O is secured a sprocket-wheel P, over which passes a sprocket-chain P', also passing over a sprocket-wheel P<sup>2</sup>, secured on one outer end of the main driving-shaft B. When the latter is rotated, a similar motion is imparted to the shaft O, which by its cam N moves the plunger K up and down in the female die F, so that the top surface of the said plunger is pressed in contact with the under side of the material J at a time when the male die E is in its lowermost position—that is, embossing the material J, as previously described.

It will be seen that by this machine the material is first embossed before being formed into the box, whereby the compression of air in the box while being formed is avoided, and consequently less power is required for imparting a reciprocating movement to the head D.

It is understood that the shape of the dies E and F, as well as the shape of the plunger G, cutter H, and mold I, can be greatly varied to ornament the boxes and lids to any desired extent.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The method of forming embossed boxes, which consists in first embossing the material from which the box is made and then pressing up the sides of the box, substantially as described.

2. The method of forming embossed boxes, which consists in first embossing the material from which the box is made, then cutting out the box-blank, and finally pressing the outer edges of the blank into vertical position to form the sides of the box, substantially as described.

3. In a box-making machine, essentially as described, the combination, with a reciprocating head carrying a male embossing-die and a combined cutter and plunger, of a fixed bed having a female die in line with the male die, a mold formed with knife-edges in line with the plunger, and means for reciprocating said head, whereby the material is embossed, cut, and formed at one operation of the head, substantially as and for the purposes described.

4. In a box-making machine, the combination, with the reciprocating head carrying a male die having an embossing-surface, of a fixed head carrying a female die formed to receive the embossing-surface of the male die, said female die provided with a central opening, a stamping-plunger operating in said opening, and mechanism intermediate the said reciprocating head and the plunger and the power-shaft, whereby the material is embossed and stamped at the same time and during one complete movement of the reciprocating head, substantially as and for the purpose described.

5. The hereinbefore-described improved box-making machine, consisting in the vertically-reciprocating head D, the male embossing-die secured thereon, the combined cutter and plunger secured thereto, consisting of the plunger G and the cutter H, surrounding said plunger, a space formed therebetween, the edges of the cutter projected slightly below the plunger, a fixed bed A<sup>4</sup>, secured to the frame of the machine, a centrally-perforated female die secured thereto in line with the male die, a mold I, projected up from the bed A<sup>4</sup> and extended below the same, having an open bottom, cutting-edges I, formed on the upper end of the mold, a plunger K, operating in the female die E, the power-shaft B, and intermediate mechanism between said shaft, the reciprocating head, and the plunger for operating them at the same time, substantially as and for the purpose described.

JULIUS MOHS.

Witnesses:

GEORGE CORBION, Jr.,  
OSWALD SEIDEL.