(No Model.)

2 Sheets—Sheet 1.

C. COUPLAND.

MACHINE FOR PREPARING THE COVERING FOR TOP ROLLS FOR DRAWING AND SPINNING MACHINES.

No. 321,952. Patented July 14, 1885.

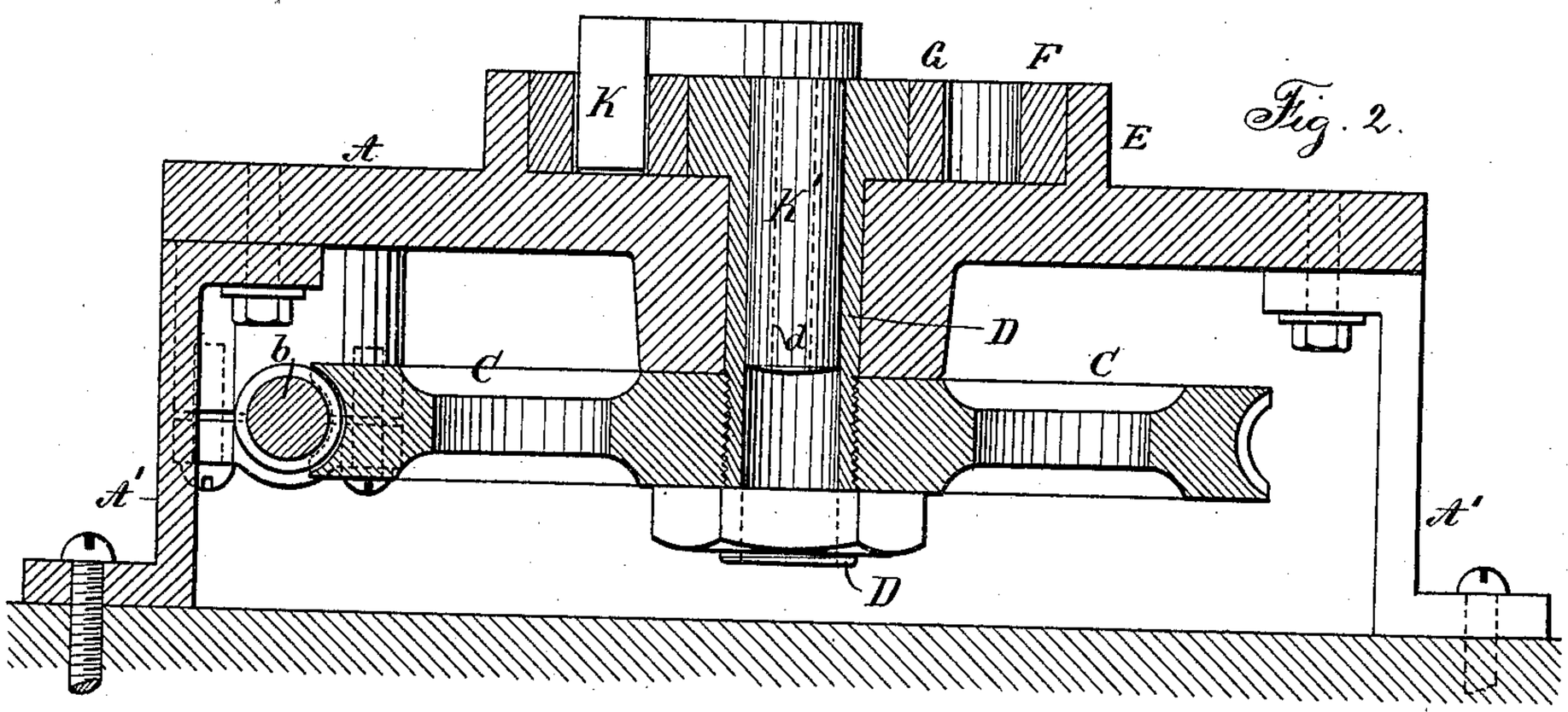
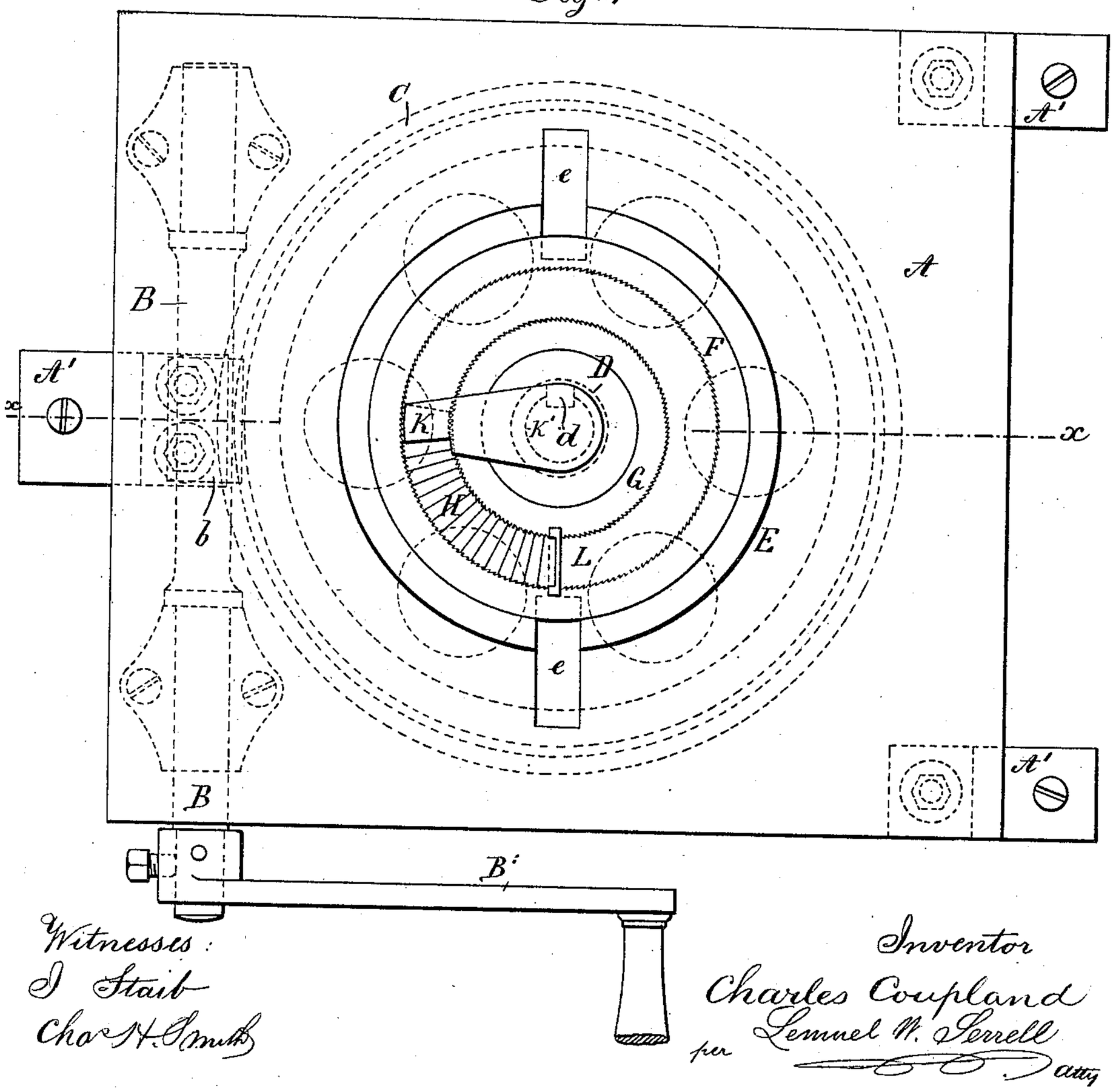


Fig. 2.

Fig. 1.



Witnesses:
I Stair
Chas H. Smith

Inventor
Charles Coupland
per Lemuel W. Serrell
Atty

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

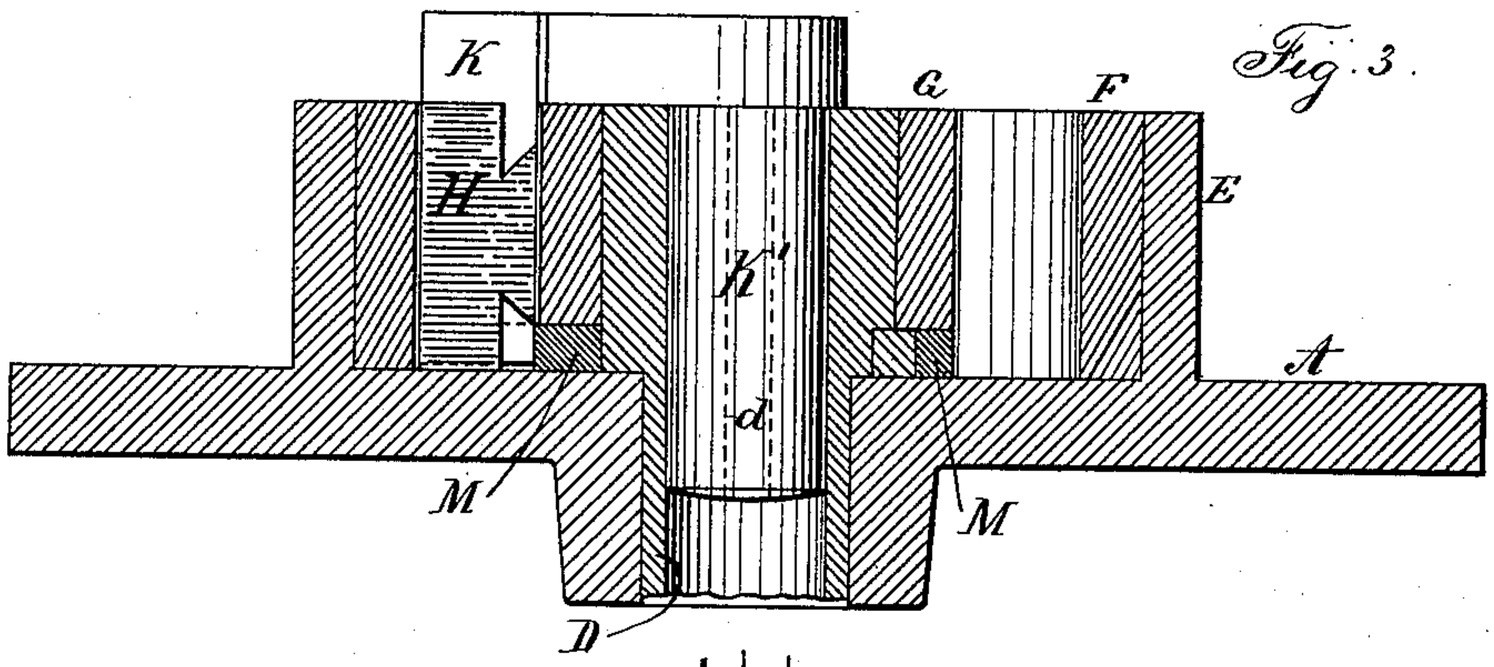


Fig. 4.

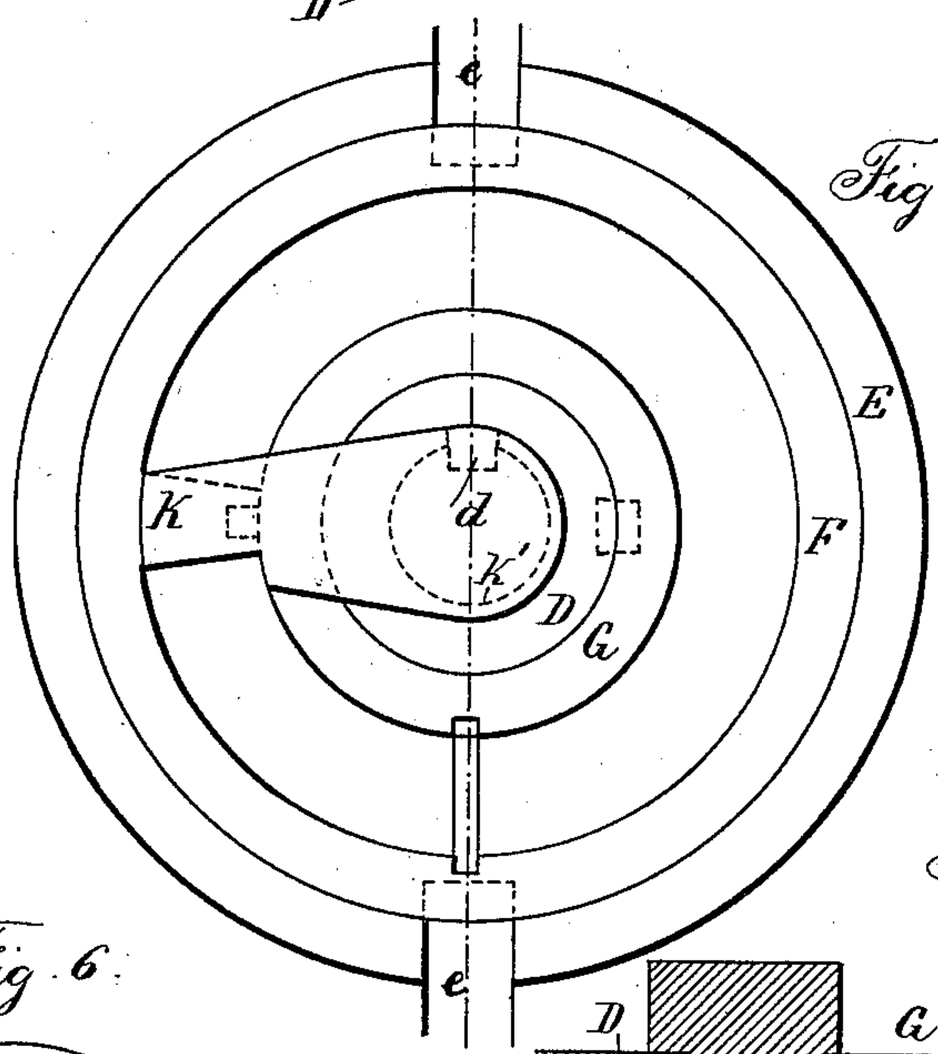
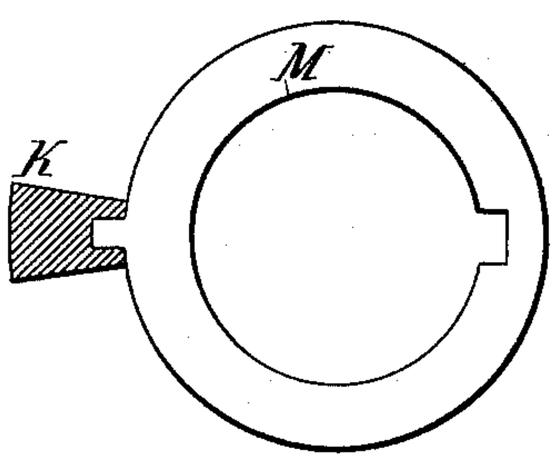
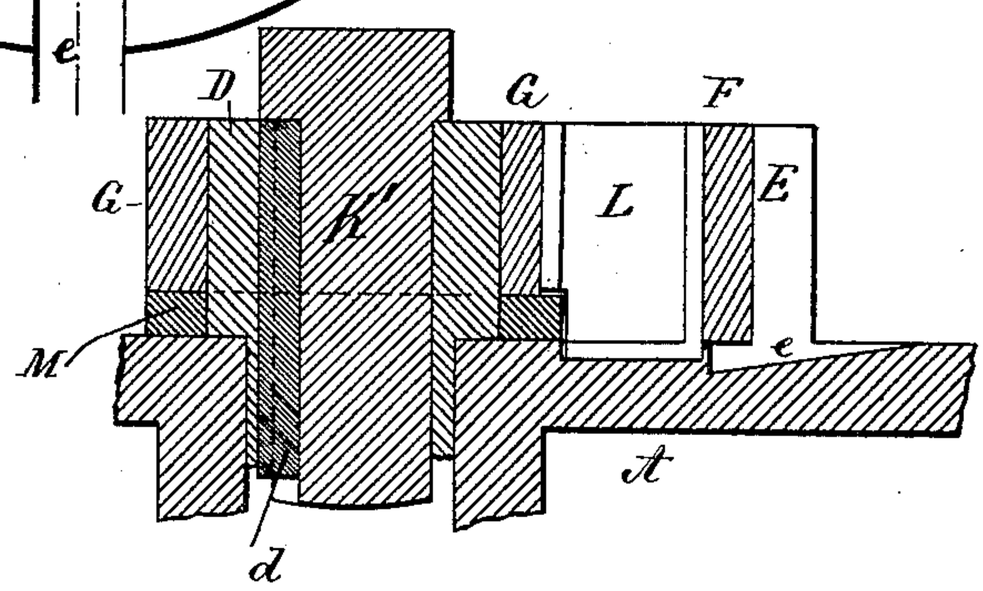


Fig. 5.

Fig. 6.





Witnesses:
I. Stait
Chas. H. Smith

Inventor
Charles Coupland
per Lemuel W. Serrell
atty

UNITED STATES PATENT OFFICE.

CHARLES COUPLAND, OF SEYMOUR, CONNECTICUT.

MACHINE FOR PREPARING THE COVERING FOR TOP ROLLS FOR DRAWING AND SPINNING MACHINES.

SPECIFICATION forming part of Letters Patent No. 321,952, dated July 14, 1885.

Application filed April 6, 1885. (No model.)

To all whom it may concern:

Be it known that I, CHARLES COUPLAND, of Seymour, in the county of New Haven and State of Connecticut, have invented an Improvement in Machines for Preparing the Covering for Top Rolls for Drawing and Spinning Machines, of which the following is a specification.

In my application No. 111,520, filed November 12, 1883, I have described a roll for drawing and spinning machines, in which sections of leather are laid together flatwise and compressed so as to stand radially around the metallic portion or body of the roller and form the surface of leather for the said roll for drawing or spinning machines.

My present invention relates to mechanism made use of in packing together the said sections of leather in a circle and compressing them so that the leather becomes exceedingly hard and solid, and the said circle of leather is to be taken out from this compressing-machine and received by and retained in the metallic portion of the roller.

In the drawings, Figure 1 is a plan view of the machine complete. Fig. 2 is a vertical section at the line *x x* of Fig. 1, the stock K′ being in elevation. Fig. 3 is a section of the leather-holding rings and follower for compressing the leather, the stock K′ being in elevation, and Fig. 4 is a plan of the same. These two latter figures are upon an enlarged scale. Fig. 5 is a section of the holding-rings at the abutment, taken at the line *y y*, Fig. 4; and Fig. 6 is a separate plan view of the ring and arm that connects the lower end of the compressing-follower to the shaft with the follower in section.

A is the bed-plate, upon suitable legs A′. B is a horizontal shaft, upon which is a screw-pinion, *b*. C is a gear-wheel, into the edge of which the screw-pinion *b* gears. D is a tubular shaft, passing through a hub in the center of the bed A. This shaft D and gear-wheel C are permanently connected together, and said tubular shaft D can be revolved with a very powerful motion by the gear-wheel C, screw-pinion *b*, shaft B, and crank-handle B′. It is preferable to revolve these parts by hand, because the leather sections are packed and compressed successively, rendering it necessary to revolve the shaft B first one way and then the other.

Upon the top of the bed A is a stationary ring-guide, E, either cast with or connected to the said bed A. Within this guide E is a removable former-ring, F, and the head of the tubular shaft D rests upon the bed A, and is surrounded by the inner ring, G. The leather sections H are placed between the former-ring F and the inner ring, G, and compressed successively by the follower K, which follower is made as an arm extending out from the cylindrical stock K′, that passes into the upper end of the tubular shaft D; and there is a key or feather, *d*, which causes the follower to turn with the tubular shaft D and wheel C. This follower K extends down into the groove between the former-ring F and the inner ring, G, and its faces diverge in radial planes from the axis of the shaft D. In the rings F and G there are vertical channels for the reception of the slide plate L, and the bottom end of this slide-plate passes into a recess or mortise in the bed A. This plate forms an abutment, against which the sections of leather are to be pressed. These sections of leather may be cut out by a die to form dovetailed interlocking projections, as in my aforesaid application. The leather section H (shown in Fig. 3) is thus cut out. These sections are to be packed in, as indicated in Fig. 1, by placing a few at a time into the space between the rings F and G and compressing them successively by turning the crank B′, so that the follower K is forced powerfully against such sections, squeezing them together and giving to each section a tapering form. This operation is proceeded with successively until the whole annular space between the rings F and G is filled with the sections of leather. In introducing the last of these sections it is preferable to compress several sections of leather when the follower K has been turned around until it reaches the abutment L. Several of these sections of leather can be lifted out after being powerfully compressed and other leathers inserted and compressed, after which the follower K is lifted up and removed, and also the abutment L is lifted out and the compressed leather sections introduced to fill up the space. This can easily be done, because

the expansion of the leather causes the same to rest against the inner surface of the former-ring, F, and the friction aids in holding the sections of leather in the position to which they may have been compressed and to aid in holding the sections of leather. The interior surface of the former-ring F may be channeled with fine grooves similar to saw-teeth, as shown in Fig. 1, and the exterior surface of inner ring, G, may be similarly channeled.

Having filled the annular space between the former-ring F and the inner ring, G, with sections of leather powerfully compressed together, the said rings F and G are to be lifted out of this machine, the sections of leather remaining in place between them. The inner ring, G, is then to be forced out, and the dovetailed projections of the leather may be trimmed off smoothly and to the proper size and shape by placing the former-ring F in a turning-lathe, or any suitable revolving cutter may be made use of for this purpose. The metallic body of the drawing-roll is to be clamped upon the leather sections, such metallic body being formed in two parts of slightly smaller diameter than the exterior surface of the ring of leather. One part of the body is to be applied at each side of the ring of leather sections, and these two parts of the body are to be screwed together firmly to form the roll with the leather surface complete and ready for use, as set forth in my aforesaid application, it being understood that after the metallic body of the roller has been bolted together to secure the sections of leather the former-ring F is to be pressed off laterally from around such leather sections.

The leather surface of the drawing-roll may require smoothing, which can be done in a turning-lathe, or in any other suitable manner.

To facilitate the removal of the former-ring F and the leather sections held by it from within the stationary ring E, I provide slots, as at *e*, in the bed A for the introduction of levers or other tools to raise up the ring F and with it the ring of leather sections and the inner ring, G.

The force made use of in compressing the leather sections is considerable, and sometimes there is risk of bending that part of the follower K that passes down as an arm into the space between the rings F and G. To strengthen this follower, especially where the same is adapted to large sections of leather, I make use of a ring, M, keyed upon the outside of the head of the tubular shaft D; and this ring is below the inner ring, G, and there is a projecting block or arm entering a notch in the lower end of the follower K, so that the lower end of this follower K is supported and moved by this ring; but it is necessary to hold the inner ring, G, so that it will not be revolved. This will usually be accomplished by the abutment L passing into the slot in the side of this ring G and down into a mortise in the bed A; but this ring may be held in any other convenient manner.

In all cases the follower may be lifted out to allow for the insertion of the last sections of leather between the former-ring F and inner ring, G; and the ring M being fastened upon the shaft D, below the ring G, there is nothing to interfere with the removal of the rings F and G with the leather between them.

It will be apparent that the sections of leather as packed together and compressed partake of the character of an arch, and that the pressure and expansion are outwardly within the former-ring F; hence this ring is indispensable; but the ring G might be dispensed with, although its use facilitates the proper placing of the sections of leather.

I claim as my invention—

1. The combination, with the shaft D and means, substantially as described, for revolving the same, of the former-ring F, ring G, follower K, having an arm that extends down between the rings F and G, and abutment L, substantially as set forth.

2. The bed A, tubular shaft D, gear-wheel C upon said shaft D, and the screw-pinion, shaft, and crank, in combination with the follower K, removably connected to the tubular shaft, the former-ring F, and the abutment L, substantially as set forth.

3. The combination, with the bed A and its guide-ring E, of the removable former-ring F, the shaft D, and means, substantially as specified, for operating the same, the follower K, and abutment L, substantially as set forth.

4. In a mechanism for compressing sections of leather into a ring, the combination, with the former-ring F, of a follower, a shaft, and means, substantially as specified, by which the same is partially revolved to compress the sections of leather, and a removable abutment against which the sections of leather are pressed, substantially as specified.

5. The combination, with the former-ring F and an abutment, of a follower, a tubular shaft to which the follower is connected, and a ring around the tubular shaft with which the lower end of the follower is connected, and means, substantially as set forth, for partially revolving the shaft.

Signed by me this 3d day of April, A. D. 1885.

CHARLES COUPLAND.

Witnesses:
GEO. T. PINCKNEY,
WILLIAM G. MOTT.