No. 800,115. PATENTED SEPT. 19, 1905.

A. J. KROENCKE.

APPARATUS FOR MAKING BOOK BACKS.

APPLICATION FILED OCT. 24, 1903.

3 SHEETS—SHEET 1.

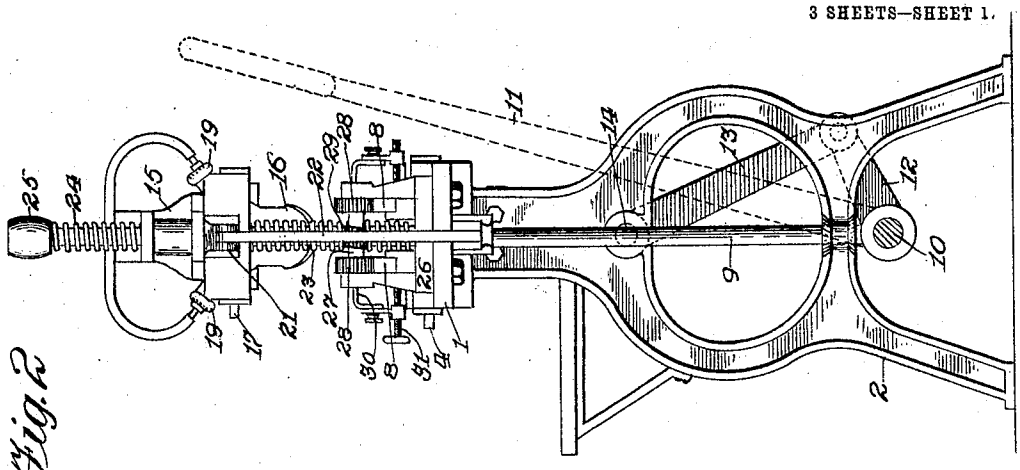

Fig. 2

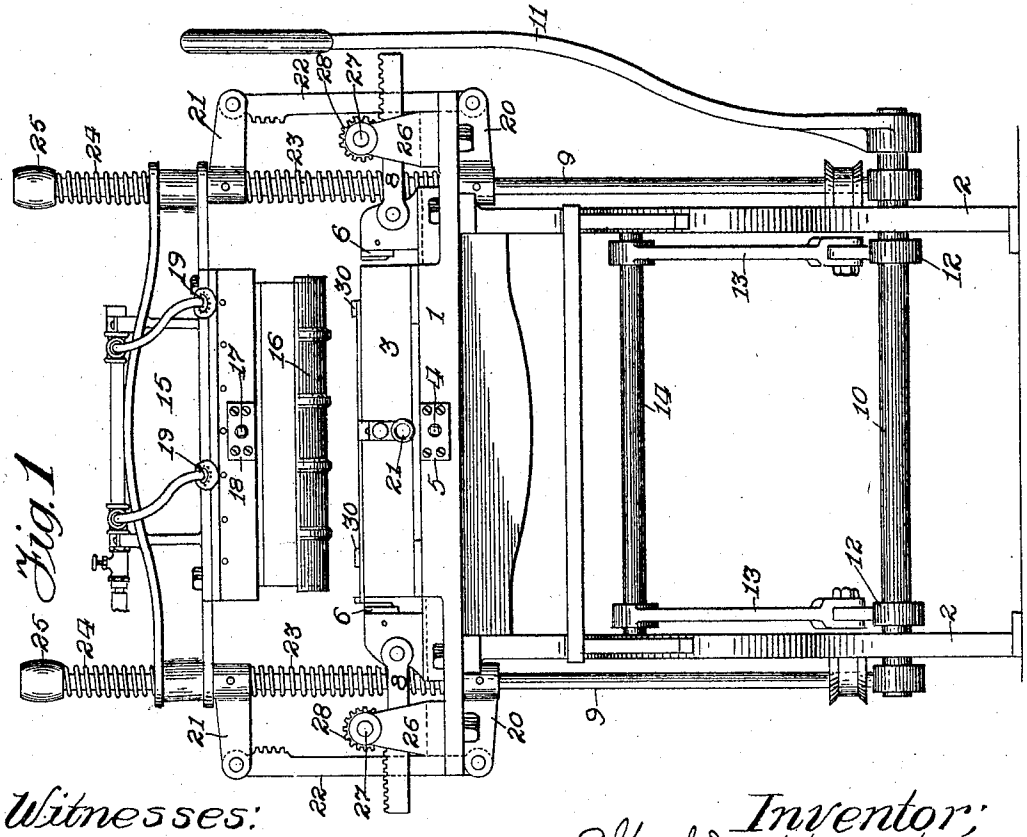

Fig. 1

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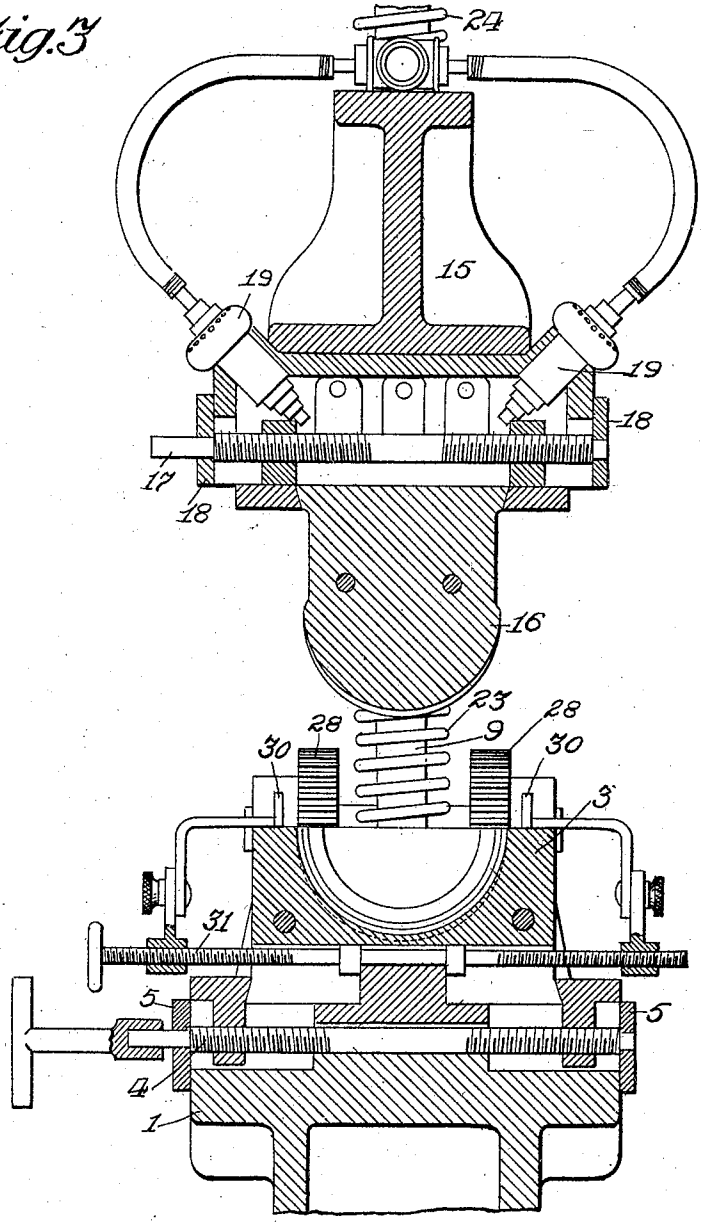
3 SHEETS—SHEET 2.

Fig. 3



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3 SHEETS—SHEET 3.

Fig. 4

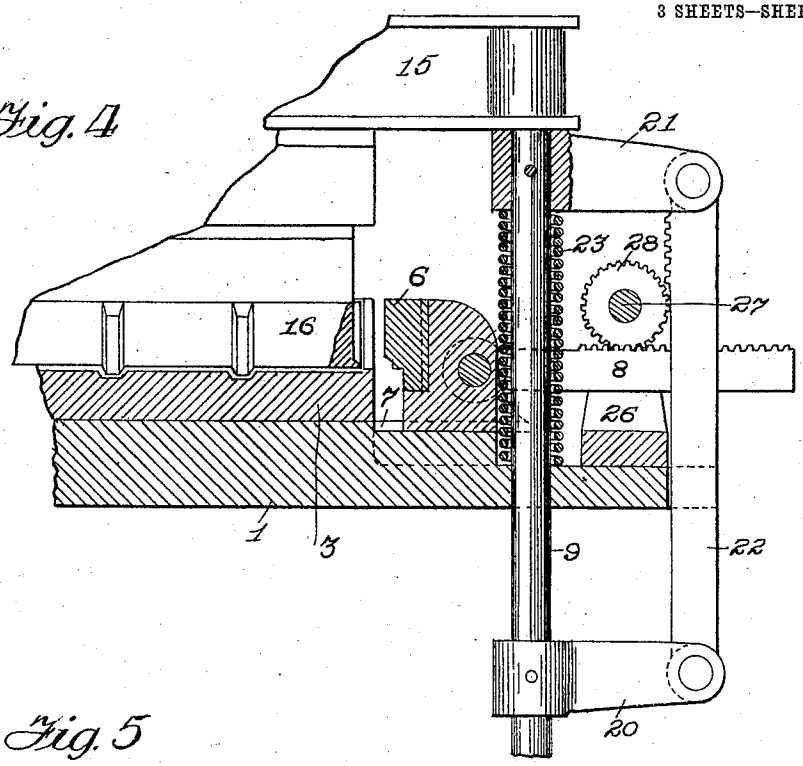
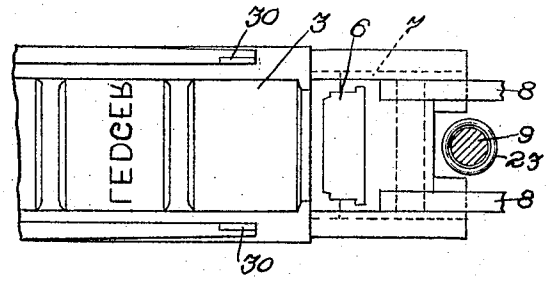


Fig. 5



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UNITED STATES PATENT OFFICE.

ALFRED J. KROENCKE, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO GEORGE J. SOULSBY, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR MAKING BOOK-BACKS.

No. 800,115. Specification of Letters Patent. Patented Sept. 19, 1905.

Application filed October 24, 1903. Serial No. 178,410.

To all whom it may concern:

Be it known that I, ALFRED J. KROENCKE, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Making Book-Backs, of which improvement the following is a specification.

My invention relates to apparatus for forming book-backs.

The object of my invention is to produce a machine by the use of which the operations of pressing book-backs into form, forming the "hubs" or "bands" thereon, and tucking or folding the covering material over the ends thereof are performed substantially simultaneously.

In describing the invention in detail reference will be had to the accompanying drawings, forming a part of this application, in which—

Figure 1 is a front elevation of my improved machine for forming backs of books. Fig. 2 is an end elevation of the same. Fig. 3 is a sectional elevation of the same. Fig. 4 is an enlarged fragmentary view of one side of the machine, partly in section. Fig. 5 is a plan view of the female and laterally-movable end dies.

Referring to the drawings, the reference-numeral 1 indicates the bed-plate or table of the machine, which is suitably supported on the standards or legs 2 2. A female die 3, mounted on the table intermediate its length, is removably secured upon the table by the screw 4, which has suitable bearings in the plates 5 5, secured to the table at each side thereof, whereby dies of different size may be secured upon said table. End dies 6 6 are so mounted in the table 1 by the dovetail connection 7 that the same may be laterally moved through the medium of the rack-bars 8, which are pivotally connected to the same.

Upright shafts 9 9 pass through the table 1 at its outer ends, the lower ends of the said shafts being enlarged and provided with an opening through which the shaft 10 passes. To one end of the shaft 10 is secured the operating-handle 11, and secured to the said shaft 10 inside the standards 2 2 are cranks 12 12. The outer ends of these cranks are pivotally connected to one end of the links 13 13, the other end of the said links being pivotally anchored on the shaft 14, secured in the standards 2 2. It will thus be seen that by actuating the operating-handle 11 in the proper direction the cranks 12 12 and links 13 13 will form a toggle which may be so actuated that the rods 9 9 will be lowered or elevated. Suitably mounted on these rods 9 9 above the table is a cross-head 15, by which a male die 16 is carried, the said die being adjustable on the cross-head by means of the feed-screw 17, which has bearings in the plates 18 18 on each side of the cross-head, and burners 19 19 are carried by the said cross-head, whereby the male die may be suitably heated. Secured to the rods 9 9 at points just below the table and also below the cross-head 15 are the outwardly-extending arms 20 21, respectively, in the outer bifurcated ends of which the rack-bars 22 22 are secured. Spiral springs 23 23 encircle the rods 9 9 and are confined between the table 1 and arms 21, and spiral springs 24 24 are provided on the rods between the cross-head 15 and heads 25 25, which are fixed on the upper ends of the rods.

Brackets 26 26 are provided on the ends of the table in which the shafts 27 27 are secured, on which are rotatably mounted the cog-gears 28 28, with which the racks 8 8 mesh. Gear-wheels 29 29, with which the rack 22 is adapted to mesh when moved vertically, are also mounted on said shafts 27.

Arranged on the opposite upper sides of the female die 3 are the guides 30 30, the position of which may be adjusted by means of a suitably-mounted screw 31.

The operation of my improved apparatus is as follows: The leather and tar-board from which the book-back is to be formed are cut to the desired size, and the tar-board having been rendered pliable by steaming or soaking the same in hot water is then coated with glue. The leather is secured thereto, the said leather having been cut to such a size that the same may extend around and be secured to the ends of the tar-board. Dies having the desired configuration to produce the hub or band required on the book-back and the female die having a plate or plates with the desired lettering inserted therein being in the machine, the leather-covered board is then placed in the female die, and the male die is then brought into operative relation to the female die, whereby the leather-covered board is forced into the form of the dies, this movement of

the male die being accomplished by the lowering of the rods 9 9 by the handle 11, as before described. Further downward movement of the rods 9 9 will compress the springs 24 24 and bring the racks 22 22 into operative relation to the gears 29, whereby the gears 28 28 will be revolved, thereby forcing the laterally-movable dies 6 6 toward the male and female dies through the medium of the racks 8 8, whereby to tuck or fold the leather over the ends of the tar-board. During both of these operations heat is supplied by the burners 19 19, whereby gold-leaf or other substance which may be applied to the lettering in the plates in the female die may be embedded and firmly affixed in the leather, the said heat also assisting in properly forming and making permanent the configuration into which the tar-board has been forced.

I claim as my invention and desire to secure by Letters Patent—

1. In an apparatus for forming backs of books, the combination of a male and a female die movable one in relation to the other, means to bring said dies into operative position, laterally-movable dies, means to bring said laterally-movable dies into operative position immediately said male and female dies are closed, and means for heating the work on which the said dies are operating, indirectly through the dies.

2. In an apparatus for forming backs of books, the combination of a stationary concave die, having a number of transverse recesses or grooves, a movable convex die having projections thereon corresponding with the recesses in the concave die, laterally-movable dies, means to bring the concave and convex dies into operative position, and means to operate the laterally-movable dies immediately the concave and convex dies are in operative position.

3. In an apparatus for forming the backs of books, the combination of a stationary female die, a movable male die, a cross-head to which said male die is removably secured vertical rods upon which the said cross-head is yieldingly carried, laterally-movable dies, means carried by said rods for actuating said laterally-movable dies when the said rods have been lowered a predetermined distance and means for actuating said rods.

4. In an apparatus for forming the backs of books, the combination with a supporting-table of a die removably secured thereon, a cross-head, a die removably mounted on said cross-head, means for actuating said cross-head, means for applying heat to the die carried by the cross-head, laterally-movable dies mounted on the supporting-table and means for actuating the said laterally-movable dies after the die carried by the cross-head has been moved a predetermined distance.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALFRED J. KROENCKE.

In presence of—

CLARENCE A. WILLIAMS,

JAMES C. HERRON.