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Patented June 24, 1902.

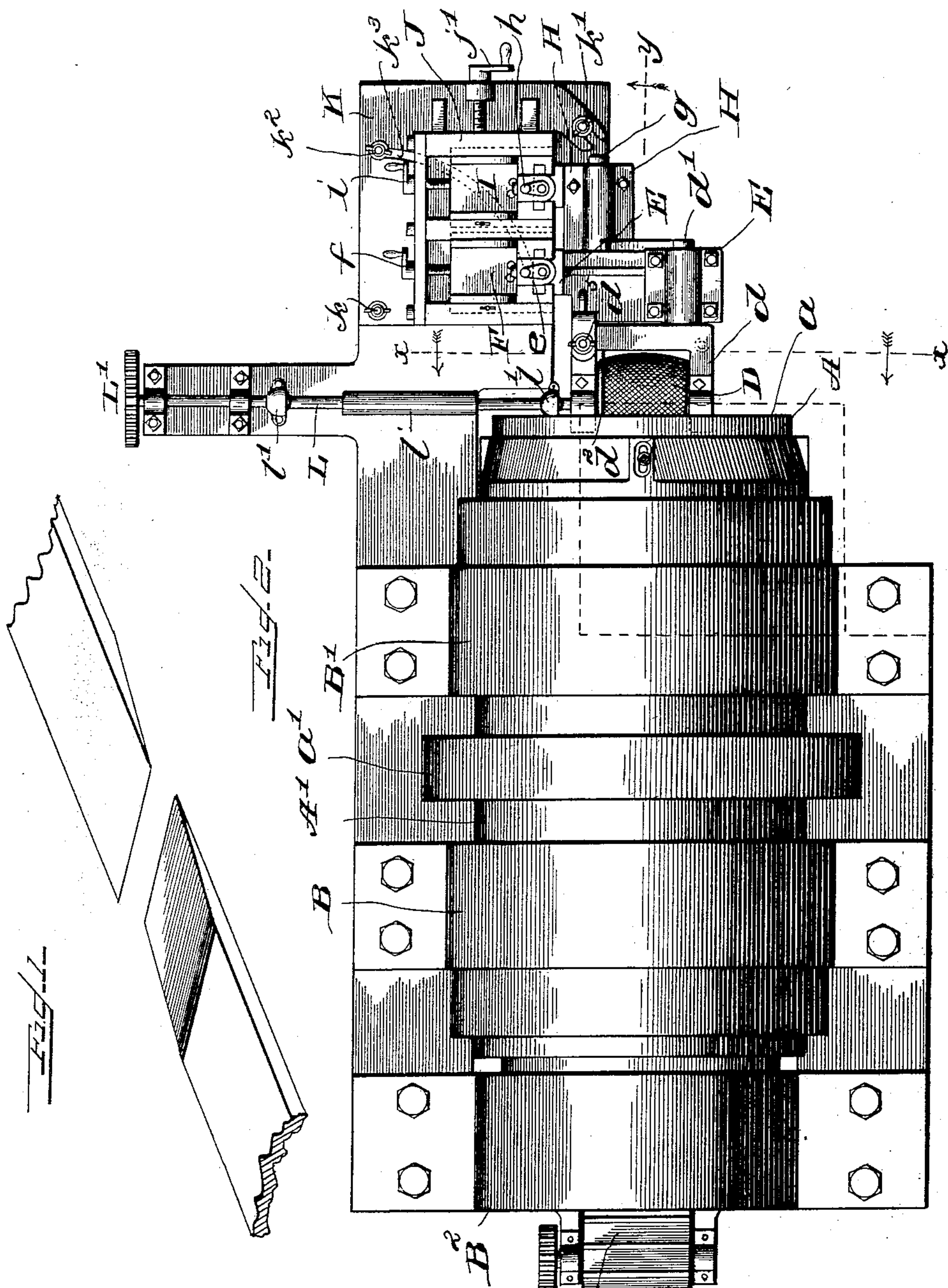
P. STEIN.

MACHINE FOR SCARFING LEATHER.

(Application filed Jan. 30, 1901.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES.

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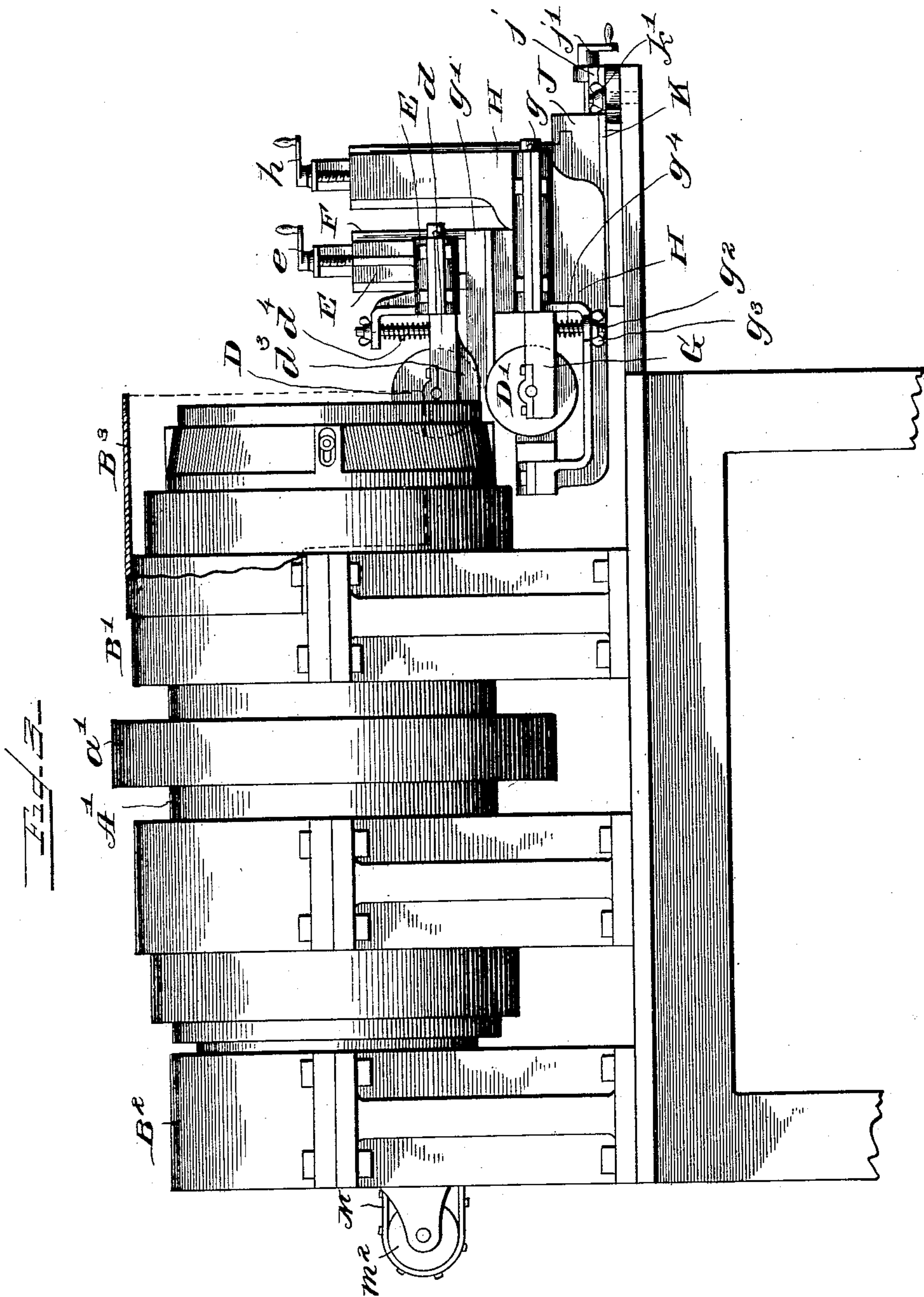
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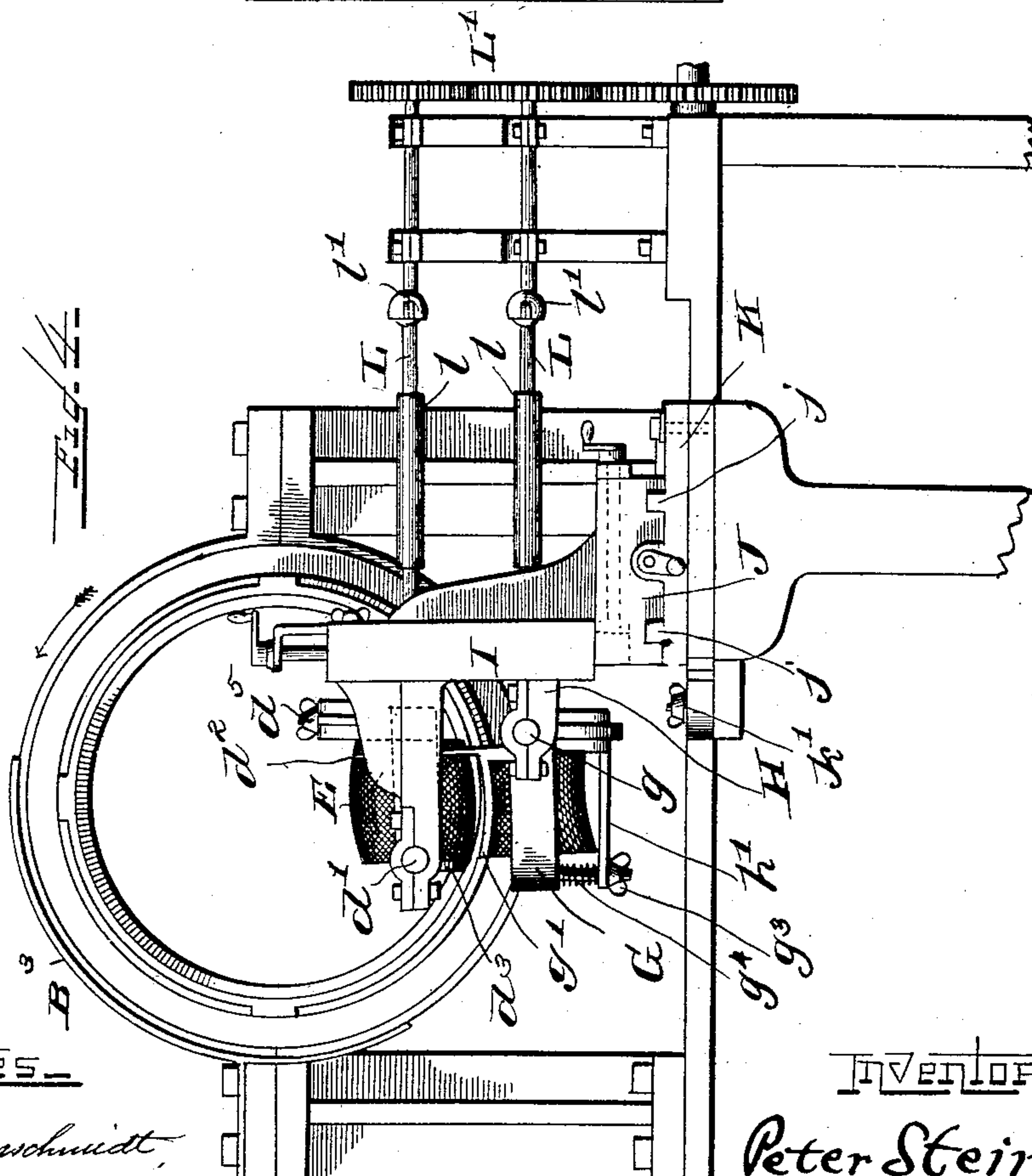
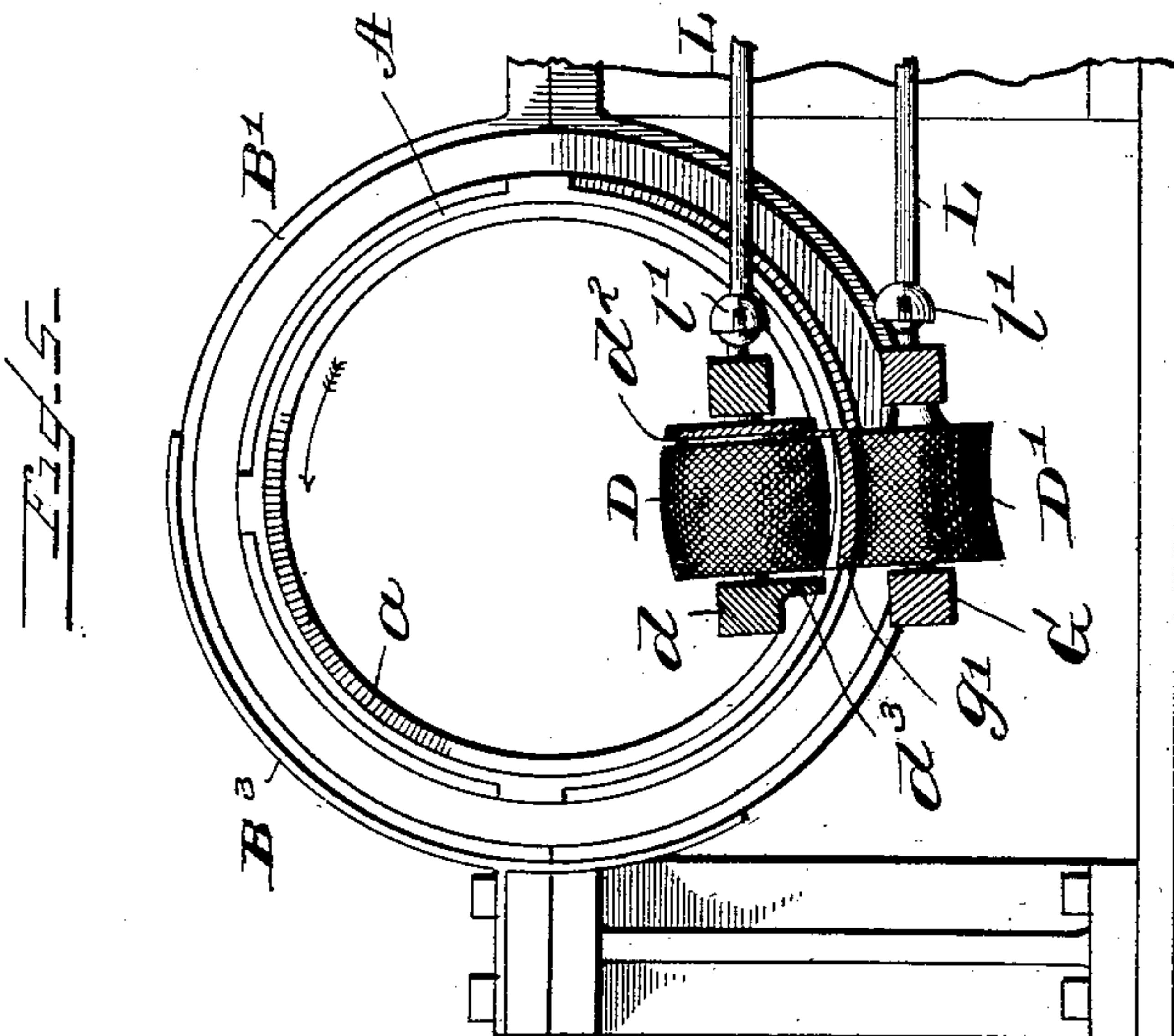
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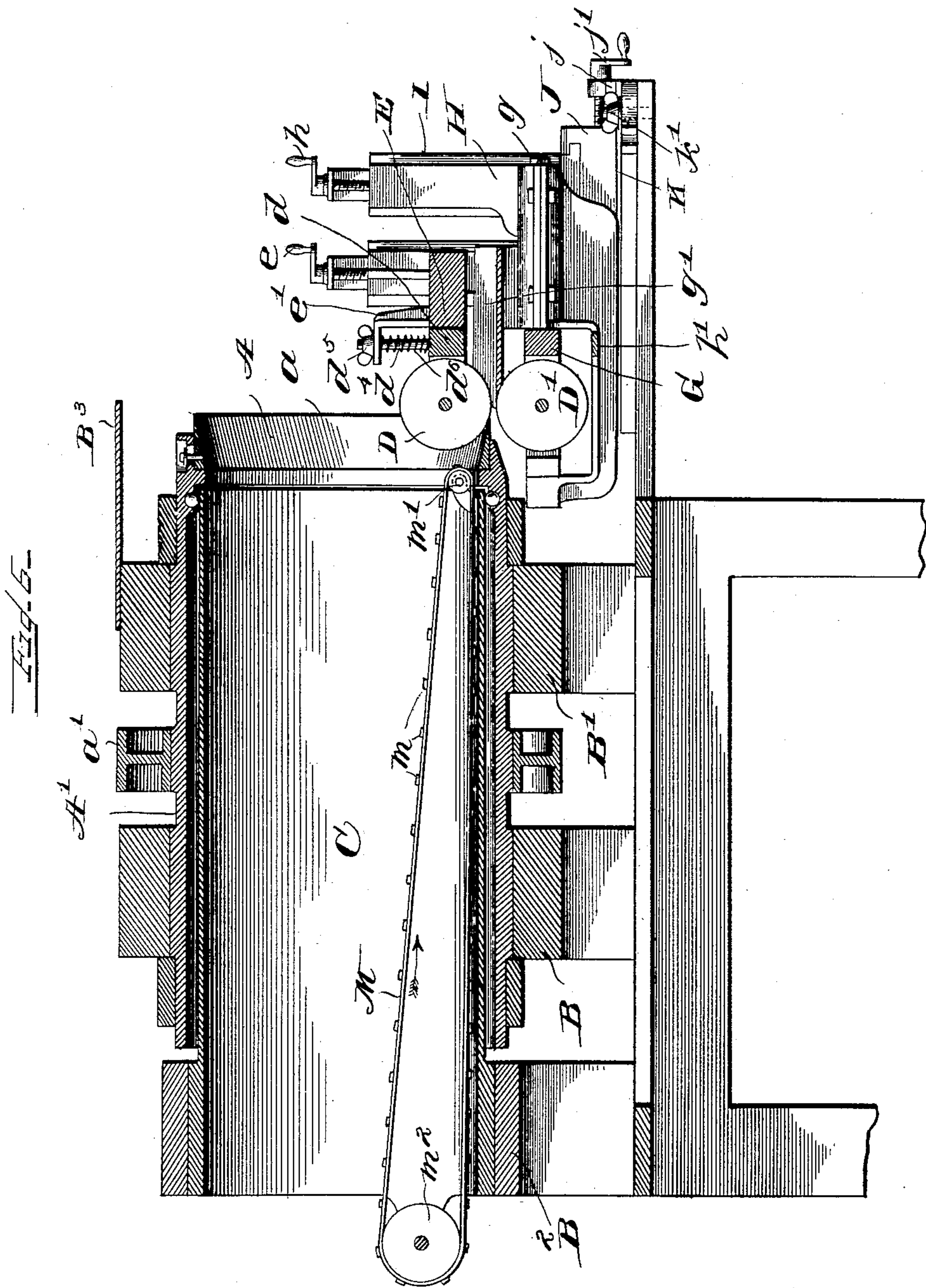
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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR SCARFING LEATHER.

SPECIFICATION forming part of Letters Patent No. 703,012, dated June 24, 1902.

Application filed January 30, 1901. Serial No. 45,356. (No model.)

*To all whom it may concern:*

Be it known that I, PETER STEIN, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Machines for Scarfing Leather, of which the following is a specification.

My invention relates to machines for scarfing leather articles, and more particularly to machines for scarfing leather belts—that is to say, to machines for thinning down the end or lapping portions of leather belts.

Objects of my invention are to provide a machine capable of rapidly and accurately scarfing off the ends of leather strips preliminary to joining their ends to form endless leather bands or belts, to provide a machine capable of operating upon leather of different thicknesses and widths, to provide a machine by which the scarfing can be accomplished without the attendance of a skilled attendant, and to provide certain details and features of improvement tending to increase the general efficiency, and to render a machine of this character serviceable and satisfactory.

To the foregoing and other useful ends the scarfing-knife is in the form of an annular band having its forward edge sharpened, the circular knife thus provided being mounted for rotation about a horizontal axis. A pair of feed-rolls are provided for feeding the leather edgewise to the cutting edge of said knife. Gages and guiding devices are provided and arranged to cooperate with the rolls in accurately presenting the leather to the knife. The said rolls are adjustably mounted and controlled by spring-pressure, thereby making it possible to readily alter the machine to accommodate different thicknesses and widths of leather. Furthermore, the construction is such as to insure accuracy in cutting or scarfing the leather regardless of whether the attendant is skilled or not. The construction and operation of my invention will, however, hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a perspective of the end portions of a leather belt and showing the manner in which the same are scarfed or thinned down, so as to permit lapping and joining. Fig. 2 is a plan

of a scarfing-machine embodying the principles of my invention. Fig. 3 is a side elevation of said machine. Fig. 4 is a front elevation of the same. Fig. 5 is a section on line *xx* in Fig. 2. Fig. 6 is a longitudinal section on line *yy* in Fig. 2.

As thus illustrated, my invention comprises an annular band-like knife *A*, secured to the end of the horizontally-disposed cylinder *A'* and provided with a cutting edge *a*. Said cylinder is mounted for rotation in bearings *B* and *B'* and is provided with a belt wheel or pulley *a'*. A stationary cylinder *C* is arranged inside of said rotary cylinder, the forward end of this stationary cylinder being preferably supported by a ball-bearing connection with the rotary cylinder and the rear end of said stationary cylinder being secured in and supported by an upright or bracket *B<sup>2</sup>*. The bore or opening of said cylinder forms a continuation of the opening of the annular knife. The guard *B<sup>3</sup>*, secured to the bearing *B'*, is preferably provided and arranged to protect the attendant against cutting. In Fig. 2 said guard is shown in dotted lines, while in Fig. 3 it is shown partly in section and partly in dotted lines.

The two superimposed feed-rolls are arranged to feed the leather edgewise to the cutting edge of said knife, it being observed that the upper roll *D* has a convex periphery, while the lower roll *D'* has a concave periphery. By this formation and by inclining the rolls to one side, as shown in Figs. 4 and 5, the end portion of the leather belt will be properly presented to the edge of the knife—that is to say, at such angle that the end portion of the belt will be scarfed off or thinned down into wedge-shaped form, as illustrated by Fig. 1. In this way the rolls serve as forming or shaping rolls in addition to feeding the leather forward to the knife, their action being to curve the end portion of the belt with reference to the curvature of the knife and it being understood at this junction that it is the side edge of the end portion of the belt which is presented to the knife. The upper roll *D* is preferably mounted upon a tilting frame *d*, which has a cylindric stem or spindle *d'*. This stem or spindle *d'* is mounted in a bearing on the vertically-adjustable frame *E*. Said verti-



cally-adjustable frame is carried by a horizontally and transversely adjustable standard or upright F, the vertical adjustment being accomplished by an adjusting-screw *e* and the horizontal movement being secured by a similar adjusting-screw *f*. The lower roll D' is similarly mounted, its immediate support being a tilting frame G, provided with a stem or spindle *g*. This stem or spindle is mounted in a bearing on the vertically-adjustable frame H, and this vertically-adjustable frame, like the frame E, is carried by a horizontally and transversely adjustable upright or standard I, and, as in the previous case, the vertical adjustment is accomplished by a screw *h*, while the horizontal adjustment is secured by a screw *i*. To insure accurate feeding of the leather, the frame G is provided with a guide and gage plate *g'*, the upper roll being provided with a groove *d<sup>2</sup>*, which receives the upwardly-projecting flange of said gage. The upper frame *d* is provided with a depending gage *d<sup>3</sup>*, which holds the leather down. In this way the proper scarfing of the belt end is rendered certain, it being unnecessary for the attendant to be a skilled or experienced workman. The upper frame *d* is provided with a rod *d<sup>4</sup>*, which extends through a bracket *e'* on the frame E. This rod has its end portion threaded and provided with a thumb-nut *d<sup>5</sup>*. A spring *d<sup>6</sup>* is mounted upon said rod, and its pressure keeps the frame *d* down in place. By rotating the nut *d<sup>5</sup>* the roll D can be tilted or adjusted to the proper position. The lower frame G is provided with a similar rod *g<sup>2</sup>*, extending through a bracket *h'* on the frame H. This rod *g<sup>2</sup>* is also threaded and provided with a thumb-nut *g<sup>3</sup>*, and a spring *g<sup>4</sup>* holds the frame G and the lower roll D' up in place. As in the previous case, the lower roll can be adjusted or tilted to the proper angle by rotating the nut *g<sup>3</sup>*. In this way the rolls are mounted to swing about longitudinal axis located at opposite sides of the median line, their movement toward each other being limited by the nuts *d<sup>5</sup>* and *g<sup>3</sup>* and their movement apart being resisted by the springs *d<sup>6</sup>* and *g<sup>4</sup>*. Thus the two rolls can be adjusted to the proper distance apart, and in operation they will exert a yielding pressure upon the leather, thereby allowing for variations in the thickness of the latter.

In order that the rolls may be given a bodily adjustment toward and away from the knife, the standards or uprights F and I are mounted upon a longitudinally-adjustable block J. This block is movable back and forth along the guideways *j*, which are formed on the upper surface of the plate K, the movement being secured by rotating the adjusting-screw *j'*. In this way the rolls are not only individually movable both sidewise and up and down in the manner previously described, but are also movable bodily and in unison toward and away from the knife. In this way the adjustability of the rolls is practically unlimited and very delicate and accurate ad-

justment of the rolls relatively to the knife can be readily secured.

Further adjustment of the rolls is secured by mounting the entire adjusting mechanism just described upon the swinging plate K. This swinging plate is pivoted at *k* and is locked against movement by a couple of thumb-nuts *k'* and *k<sup>2</sup>*, the latter being located at the end of a segmental slot *k<sup>3</sup>* in said plate. With this arrangement the plate, adjusting mechanism, and rolls can be swung forward and away from the knife. This permits the rolls to be readily changed, it being desirable at times to substitute either a smaller or larger pair of rolls for those in use, according to the character of the work.

Any suitable arrangement can be adopted for driving the feed-rolls. As a simple and effective arrangement the rolls can be driven by a couple of transversely-arranged shafts L L, mounted in suitable bearings and connected by gearing L'. With reference to the many and various adjustments of said rolls it is desirable to provide the said shafts with telescoping joints *l*, and also with universal joints *l'*. The driving mechanism thus constructed will not interfere with the proper adjustment of the rolls.

In operation the end portion of the belt is passed sidewise between the rolls, the gages *g'* and *d<sup>3</sup>* insuring a proper presentation of the leather to the knife, and as the leather advances and the knife revolves the end portion of the belt is scarfed off, the shaving passing on into the cylinder C, while the belt end passes below the knife. As a simple arrangement for disposing of the shavings a belt M can be arranged at the bottom of the cylinder C. This belt is provided with cleats *m* and is mounted upon wheels or rolls *m'* and *m<sup>2</sup>*, arranged, respectively, at front and rear of said cylinder. It will be observed that the lower leaf of said belt travels rearwardly with its lower surface very close to the cylinder C. In this way the shavings are caught and carried rearward by the cleats on the belt and discharged from the rear end of the stationary cylinder C.

What I claim as my invention is—

1. The combination of cutting means, upper and lower feed-rolls, and a guide and gage, said upper roll having a groove engaged by an upwardly-extending flange or web on said guide and gage, substantially as described.

2. A scarfing-machine comprising a knife, upper and lower feed-rolls, each roll being supported by a vertically-adjustable frame or supporting-bracket, each vertically-adjustable frame or bracket being carried by a laterally or sidewise adjustable frame or carrier, and the two laterally-adjustable frames or carriers being mounted upon a support or carrier which is adjustable in a direction to move the rolls toward and away from said knife, substantially as described.

3. A scarfing-machine comprising a knife,



feed-rolls mounted upon adjustable supports, said supports being carried by a horizontally-swinging support whereby the rolls can be swung toward and away from the knife and about a vertical axis, substantially as described.

4. A scarfing-machine comprising a knife, upper and lower feed-rolls, tilting frames upon which said rolls are mounted, the axis of each roll being at right angles to the tilting axis of the frame upon which such roll is mounted, substantially as described.

5. A scarfing-machine comprising a cutting device, a pair of feed-rolls arranged to feed the leather to said cutting device, each roll being mounted upon a tilting frame, the axes of said frames being located at opposite ends of said rolls.

6. A scarfing-machine comprising an annular knife mounted for rotation, feeding-rolls arranged to feed the leather to said knife and adapted to temporarily shape the same with reference to the curvature of said knife, movable supports for said rolls, a gage and guiding device arranged to cooperate with said rolls in properly presenting the leather to said knife, and springs adapted and applied to said supports for holding the rolls in contact with the surface of said leather.

7. A scarfing-machine comprising rotary cutting means, feed-rolls arranged to feed the leather to said knife, each roll being mounted upon a tilting frame, the axes of said tilting frames being arranged at opposite ends of said rolls, springs applied to said tilting frames in such manner as to hold the rolls in contact with the leather, said frames being mounted upon movable supports, substantially as described.

8. A scarfing-machine comprising a rotary knife, feed-rolls for feeding the leather to said knife, each roll being supported by a vertically-adjustable frame, horizontally and transversely movable or adjustable uprights or standards for supporting said frames, and a horizontally and longitudinally adjustable support for said standards or uprights, substantially as described.

9. A scarfing-machine comprising a rotary knife, a pair of feed-rolls, each roll being mounted upon a tilting frame, springs applied to said frames in such manner as to hold the rolls in contact with the leather, adjustable stops for limiting the movement of the rolls toward each other, a gaging and guiding device mounted upon the lower tilting frame, a gage or guide on the upper tilting frame, and means whereby said rolls can be adjusted in directions both transverse and parallel to the axis of said knife.

10. A scarfing-machine comprising a rotary knife, feed-rolls adjustable in direction both transverse and parallel to the axis of said knife, and shafts provided with telescoping and universal joints and connected with said rolls, substantially as described.

11. A scarfing-machine comprising a hollow

cylinder mounted for rotation and provided at its forward end with a cutting edge, a stationary cylinder supported within said rotary cylinder, feed-rolls, and adjusting mechanism for adjusting the rolls relatively to the knife, substantially as described.

12. A scarfing-machine comprising a rotary cylinder provided at one end with an annular knife adapted for scarfing belting, adjustably-mounted rolls D and D' arranged for presenting the belting to the knife and cooperate therewith to permit the knife to scarf the belting, a stationary guideway arranged within the rotary cylinder, and a conveyer arranged to take the shavings from the knife and carry them back along the stationary guideway.

13. A scarfing-machine comprising a rotary cylinder provided at one end with an annular knife adapted for scarfing belting, adjustably-mounted rolls D and D' arranged for presenting the belting to the knife and cooperating therewith to permit the knife to scarf the belting, a stationary cylinder arranged within the rotary cylinder, and a conveyer arranged to take the shavings from the knife and convey them through the stationary cylinder.

14. A scarfing-machine for scarfing belting, comprising a horizontally-disposed cylinder mounted in suitable bearings and adapted for rotation, means for rotating said cylinder, an annular knife in the form of a ring having one edge sharpened and the opposite side or edge adapted for attachment to the forward end of said rotary cylinder, a stationary cylinder arranged within the said rotary cylinder and serving as a guideway for the shavings, upper and lower feed-rolls adapted for presenting the side edge of a belt end to said knife, and a conveyer adapted and arranged to take the shavings from said knife and convey the same through the said stationary cylinder, substantially as described.

15. A belt-scarfing machine adapted for thinning down or scarfing off the lapping end portions of belting, comprising a horizontally-disposed rotary cylinder, an annular knife in the form of a ring having one edge sharpened and the opposite edge or side adapted for attachment to the end of said rotary cylinder, a stationary guideway extending through said cylinder and adapted to serve as a guide for the shavings, and a horizontally-disposed belt conveyer having its lower leaf arranged to lie flat upon the said guideway, the lower leaf of the belt thereby being capable of taking the shavings from the knife and sliding or moving the same along the guideway to the discharge end of the latter, and suitable rolls for presenting the belting to the said knife, substantially as described.

16. In a machine for thinning down or scarfing off the end portions of belting, the combination of a rotary cylinder provided at one end with an annular knife, a stationary and horizontally-disposed guideway arranged



within said cylinder, means for presenting the belting to said knife, and a horizontally-disposed belt conveyer adapted and arranged to have its lower leaf lie or rest upon the said guideway, the lower leaf of the belt thereby being capable of taking the shavings from the knife and sliding or moving the same along the guideway to the discharge end of the latter, substantially as described.

17. In a machine for thinning down or scarfing off the lapping end portions of belting, the combination of a horizontally-disposed rotary cylinder, an annular knife secured to one end of said cylinder, a convex upper feed-roll and a concave lower feed-roll arranged in position to feed the belting to the bottom of said knife, a stationary guideway arranged within said cylinder, and a conveyer arranged within the bottom of said guideway and adapted to receive the shavings from the bottom of the knife and slide or move the same along the said guideway to the discharge end of the latter, substantially as described.

18. A machine for thinning down or scarfing off the lapping end portions of belting, comprising a horizontally-disposed rotary cylinder, an annular knife in the form of a ring having its outer edge sharpened and its inner edge or side adapted for attachment to the end of said rotary cylinder, an upper convex feed-roll and a lower concave feed-roll tilted sidewise and arranged to present or feed the leather belting to the bottom of said knife, a vertically and horizontally adjustable structure for supporting said rolls, a stationary guideway arranged to extend through the said rotary cylinder, and a belt conveyer having its lower leaf arranged to lie or rest upon the said guideway, substantially as and for the purpose set forth.

19. In a machine for scarfing or thinning down the lapping end portions of belting, the combination of a horizontally-disposed rotary cylinder, an annular knife in the form of a ring having its outer edge or side sharpened and its inner edge or side adapted to be secured to the end of said rotary cylinder, a stationary cylinder arranged concentrically within the said rotary cylinder and having its end which is adjacent to said knife supported by a ball-bearing, relatively and absolutely adjustable feed-rolls arranged to present or feed the leather to the edge of said knife, and a conveyer adapted and arranged to take the shavings from said knife and slide or move the same along the inner surface of said stationary cylinder, substantially as described.

20. In a machine for scarfing or thinning down the lapping end portions of belting, the combination of a rotary cylinder having one end provided with an annular knife, a stationary cylinder forming a guideway for the shavings, a conveyer arranged within said cylinder, upper and lower feed-rolls arranged to present the leather belting to said knife, pivotally and bodily adjustable structures or supporting members upon which said rolls are mounted and movably supported, hand-screws for adjusting the adjustable members of said supporting structure, springs for holding said rolls together, the said rolls being normally tilted to one side, so as to properly present the side edge of the belt end to said knife, and a belt-pulley mounted on said rotary cylinder, substantially as described.

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Witnesses:

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