(No Model.) 6 Sheets—Sheet 1.

P. A. COUPAL.

MACHINE FOR INDENTING SURFACES.

No. 560,976. Patented May 26, 1896.

Fig. 1.

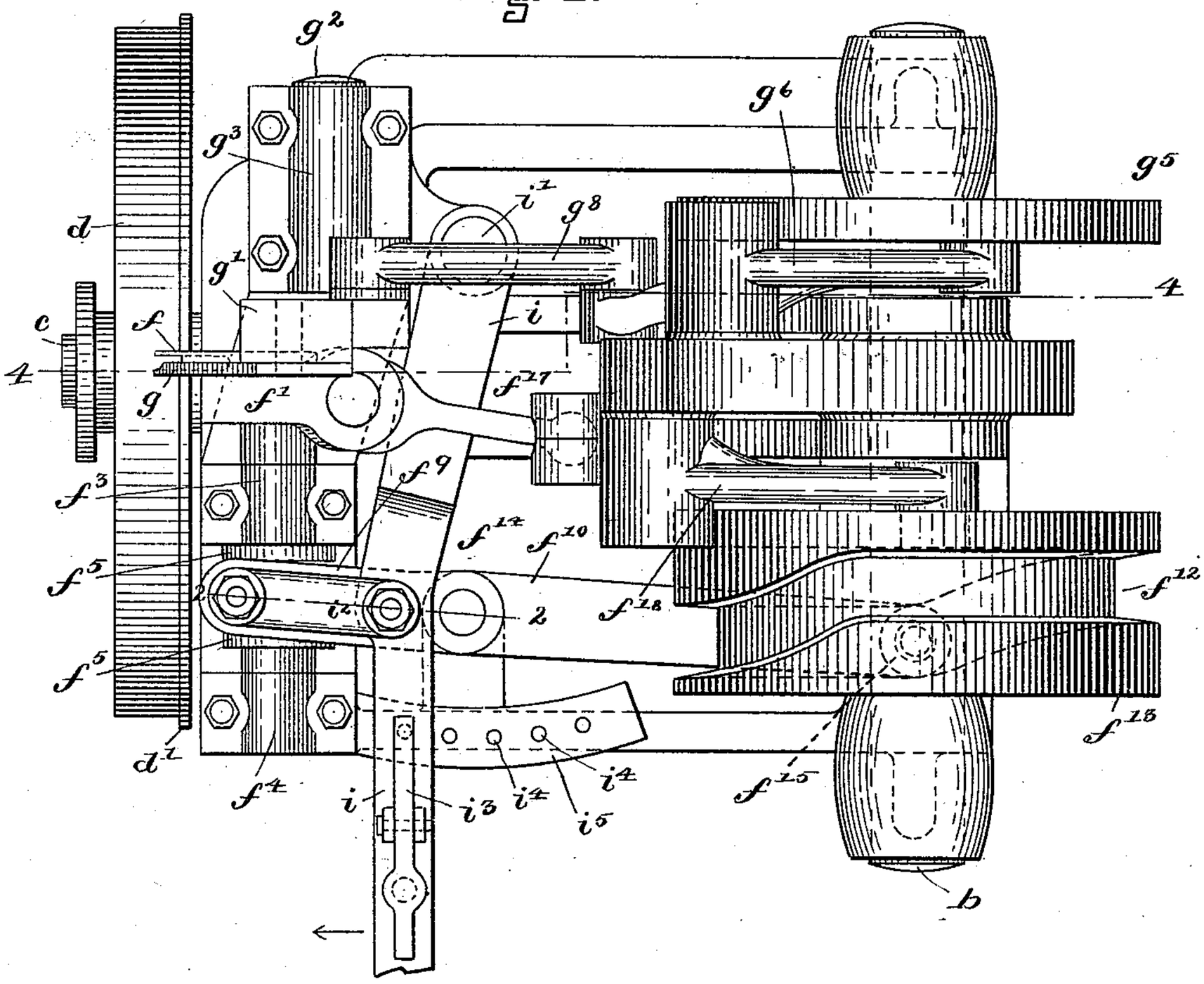
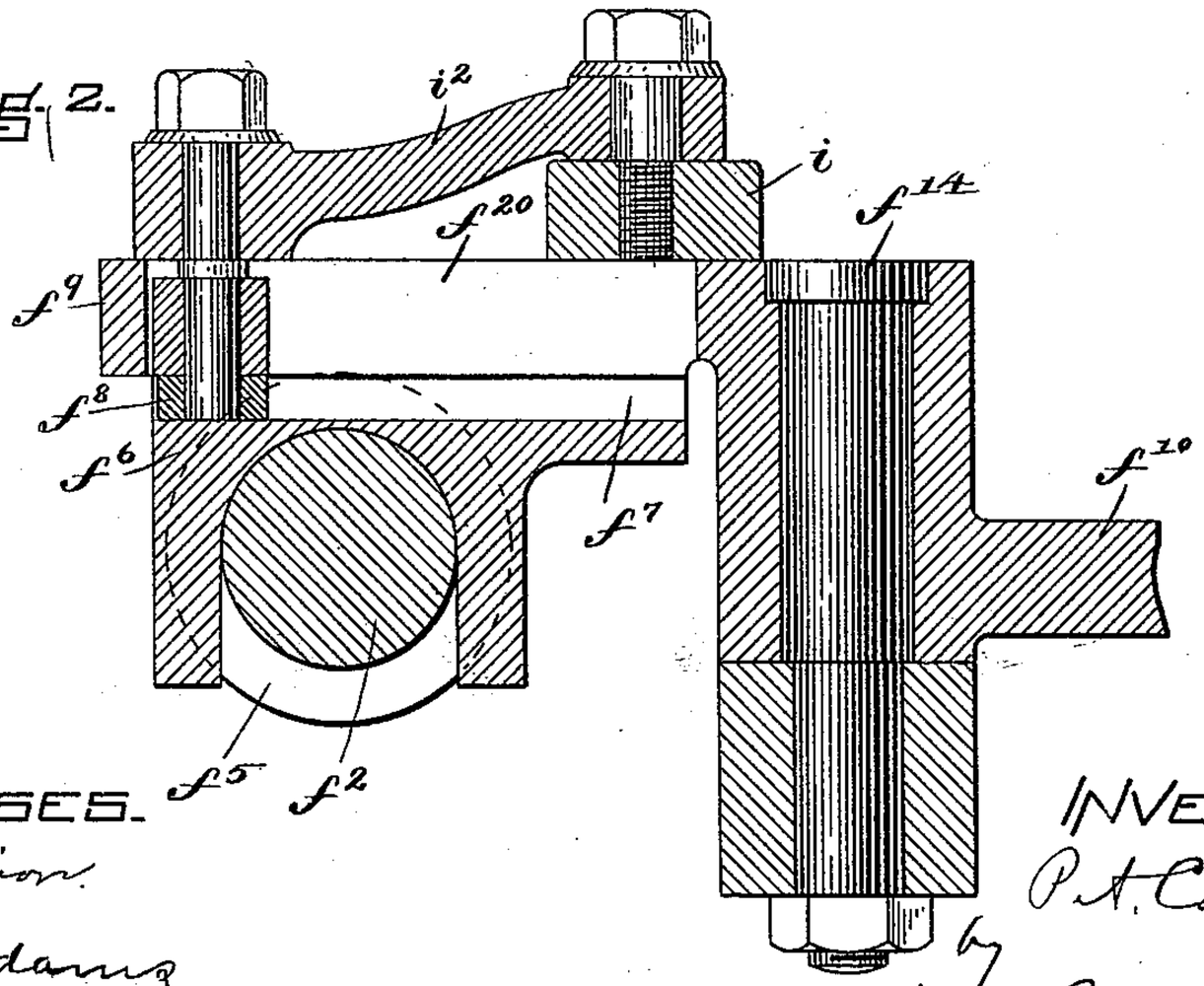


Fig. 2.



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Attys.

(No Model.) 6 Sheets—Sheet 2.

P. A. COUPAL.

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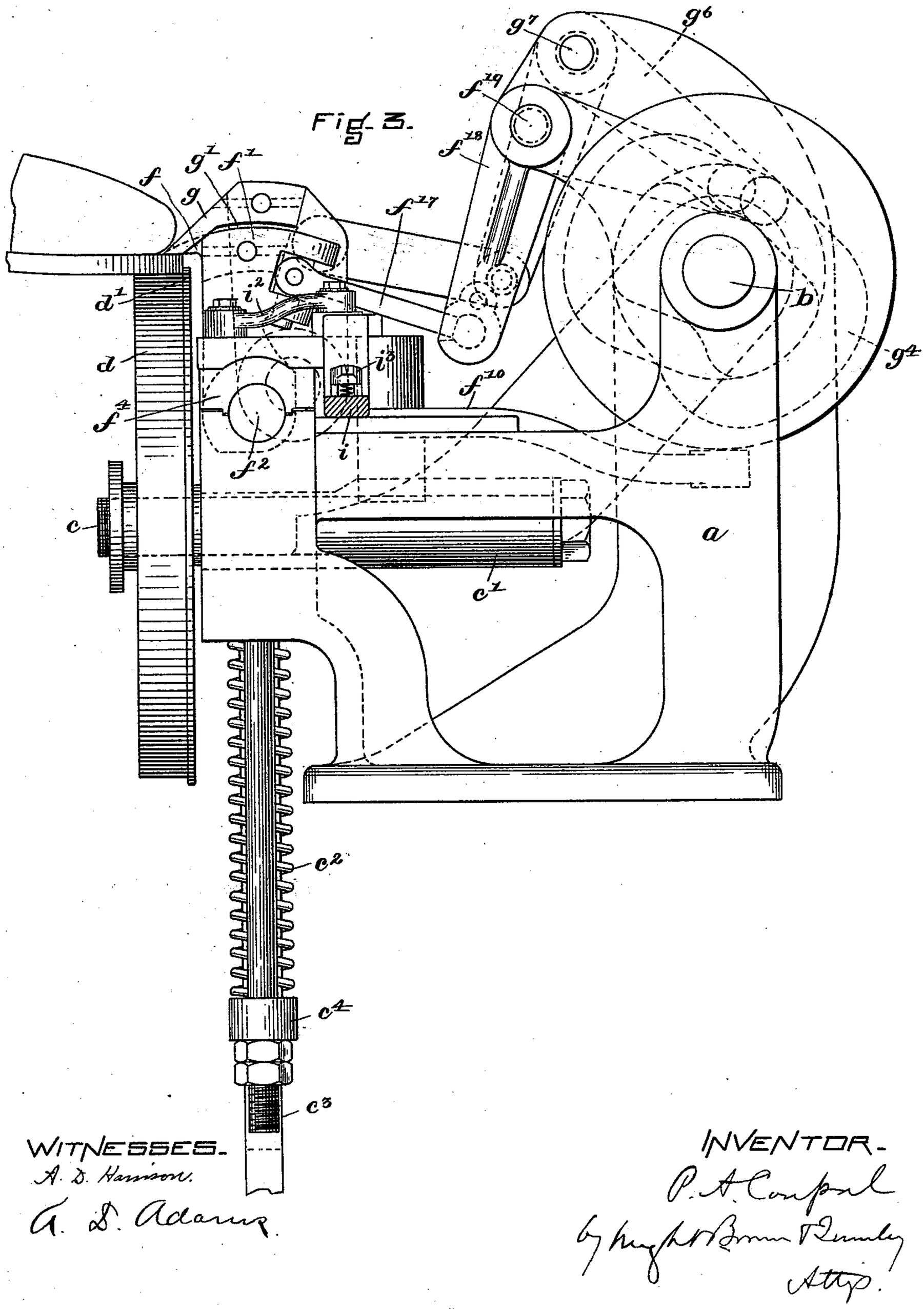
Fig. 3.



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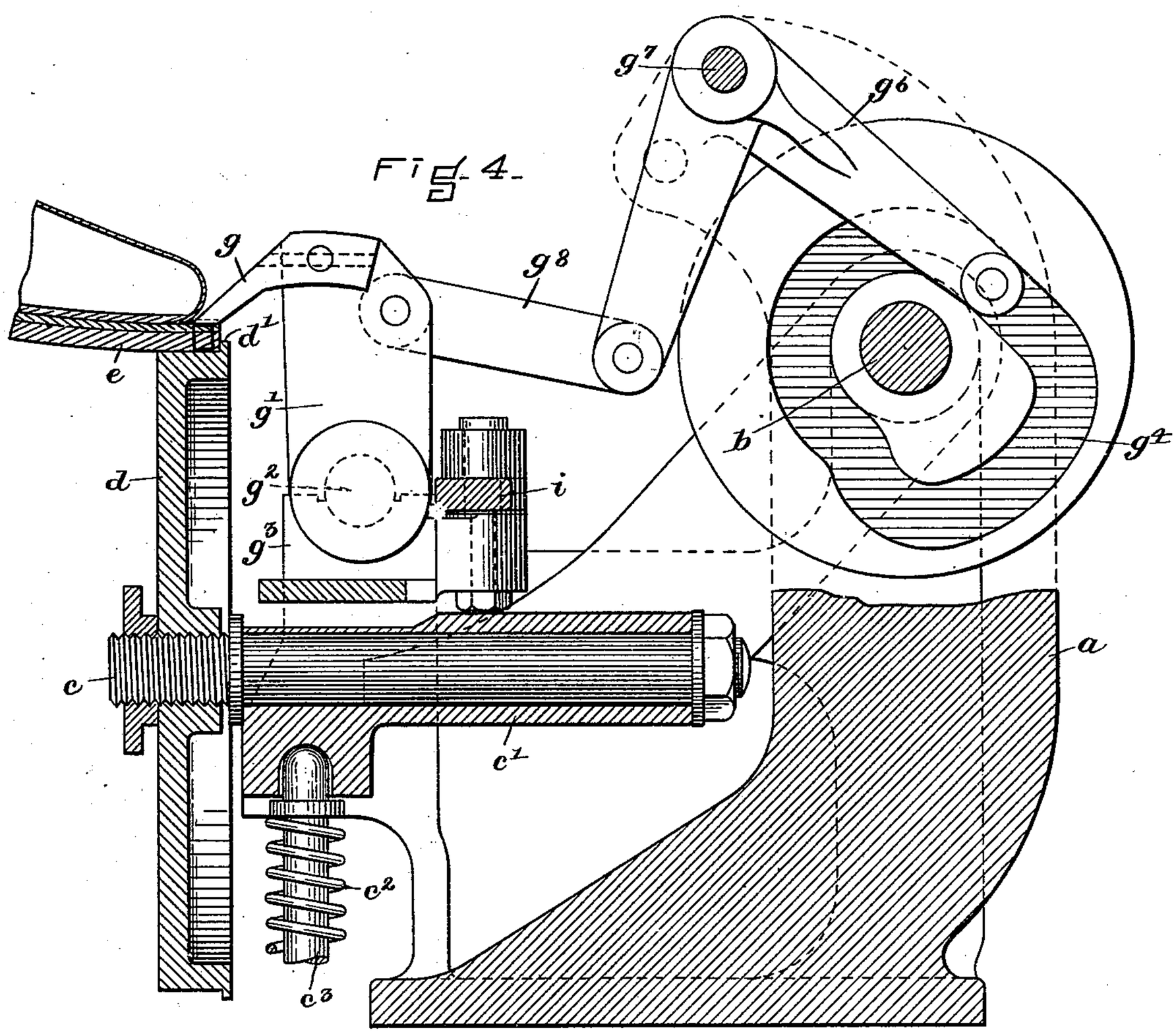
(No Model.) 6 Sheets—Sheet 3.

P. A. COUPAL.

MACHINE FOR INDENTING SURFACES.

No. 560,976. Patented May 26, 1896.

Fig. 4.



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P. A. COUPAL.

MACHINE FOR INDENTING SURFACES.

No. 560,976. Patented May 26, 1896.

Fig. 5.

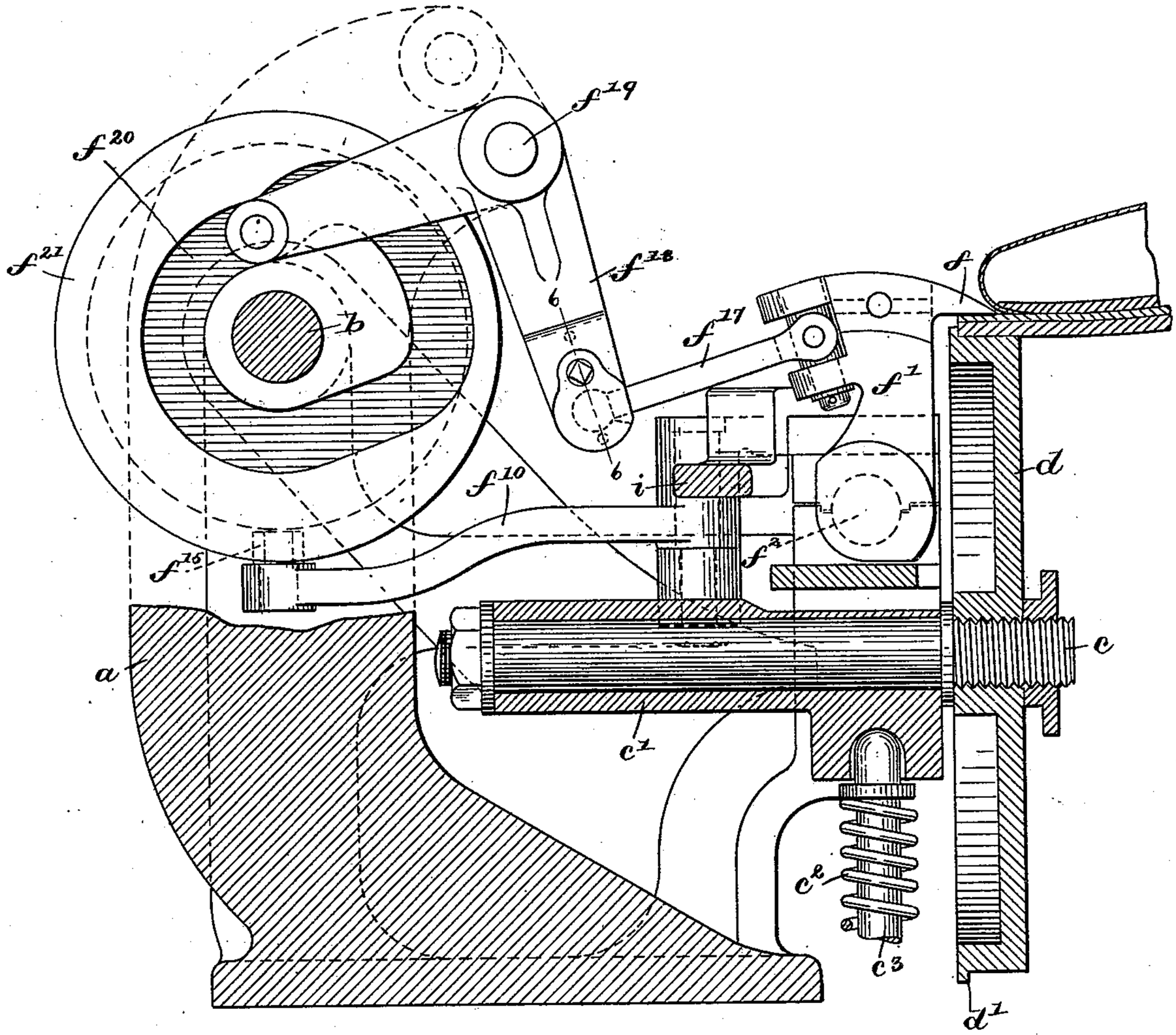
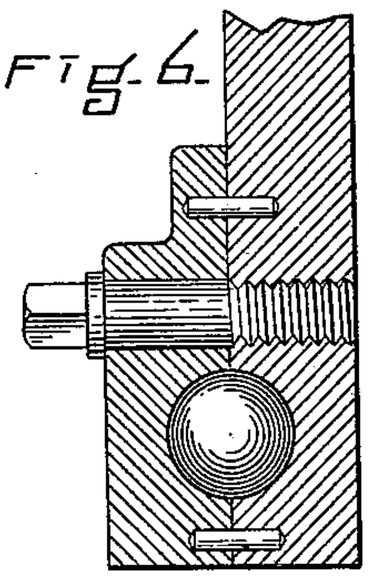


Fig. 6.



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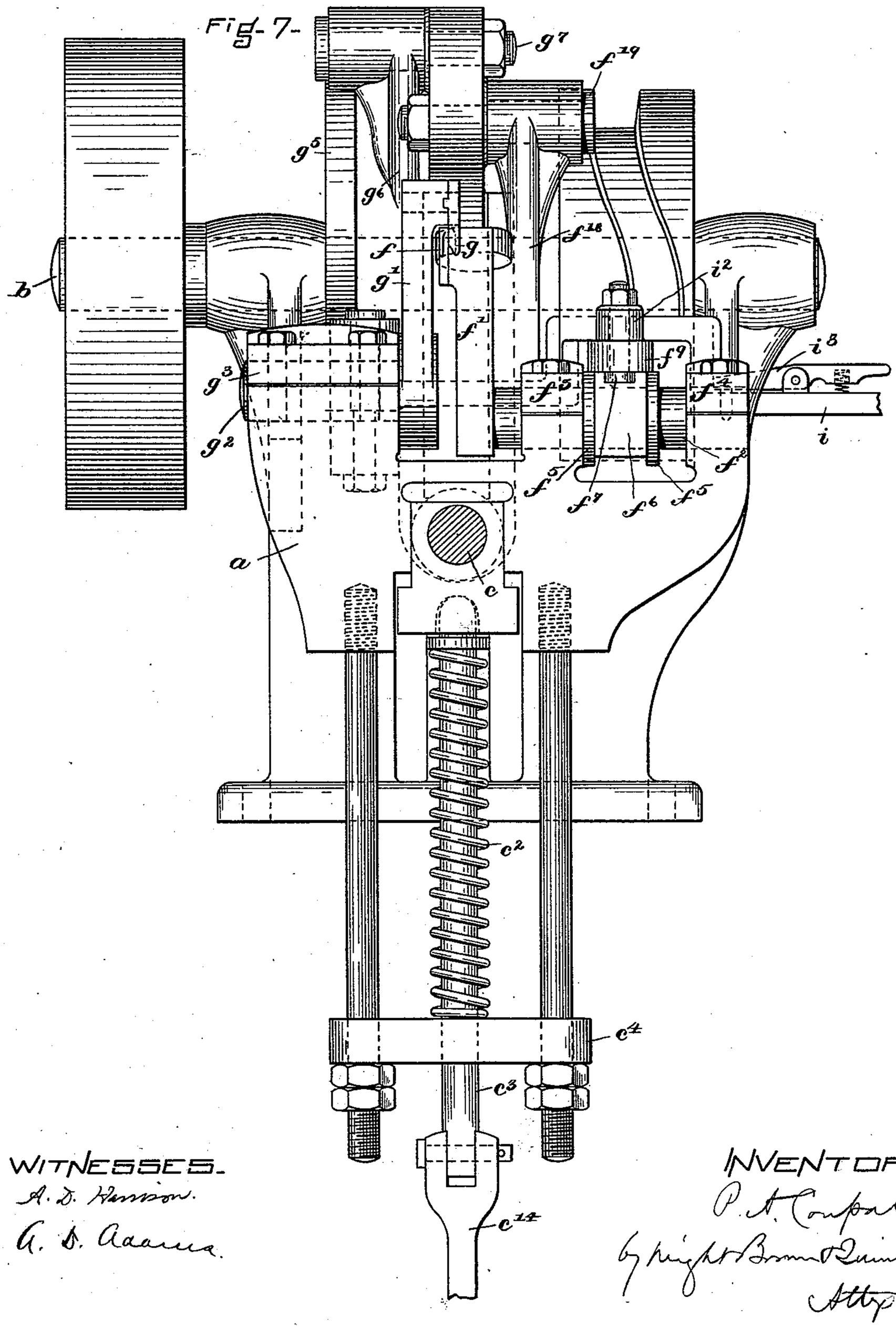
P. A. COUPAL.

MACHINE FOR INDENTING SURFACES.

No. 560,976. Patented May 26, 1896.

Fig. 7.



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(No Model.) 6 Sheets—Sheet 6.

P. A. COUPAL.

MACHINE FOR INDENTING SURFACES.

No. 560,976. Patented May 26, 1896.

Fig. 8.

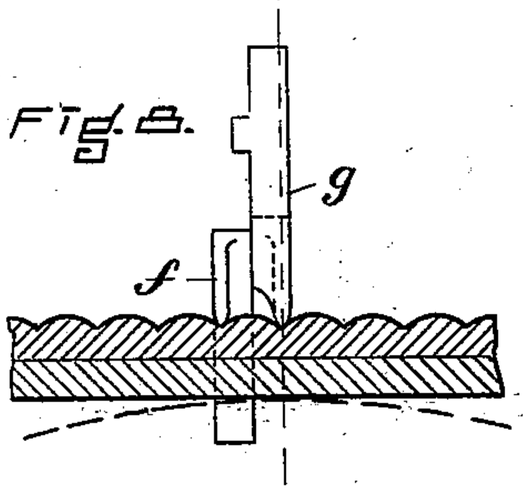


Fig. 12.

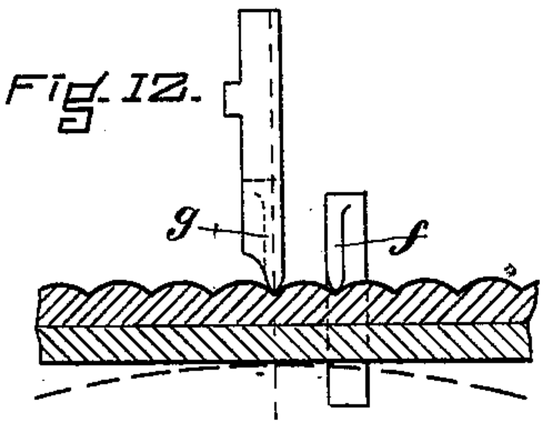


Fig. 9.

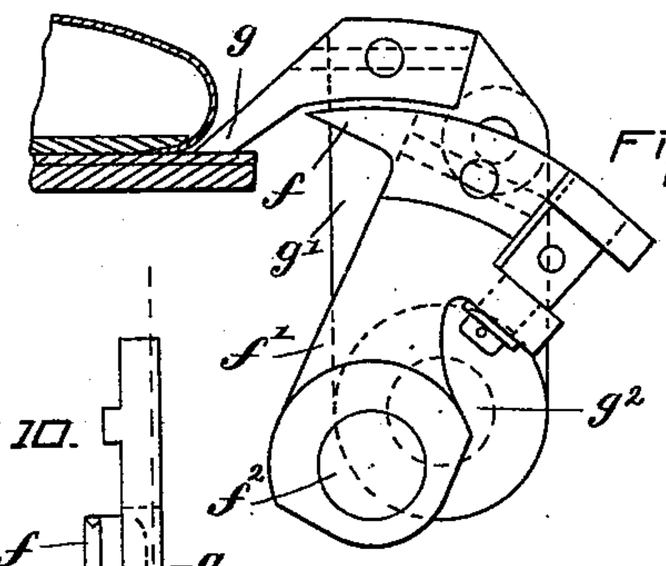


Fig. 10.

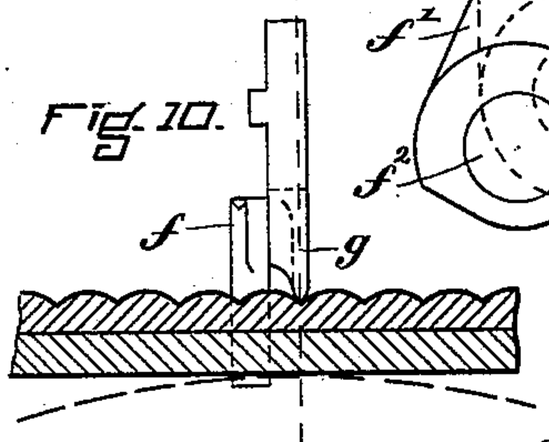


Fig. 14.

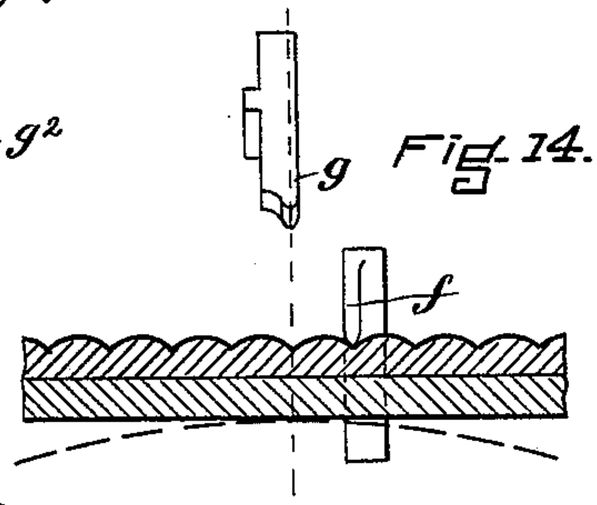


Fig. 13.

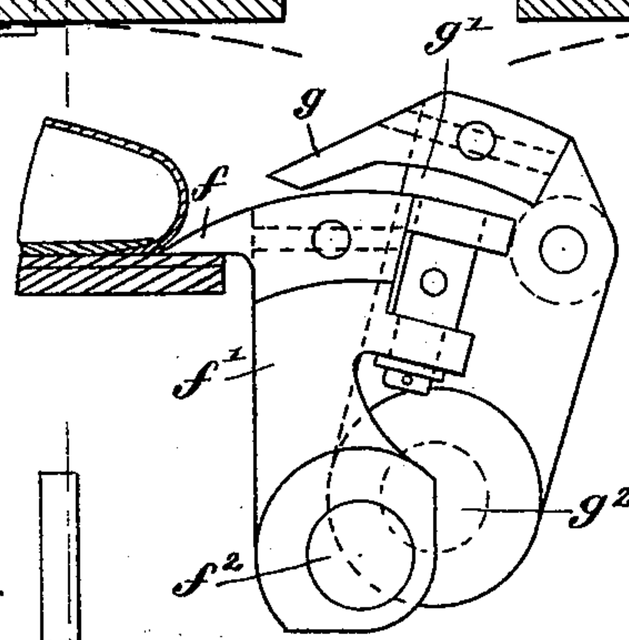


Fig. 11.

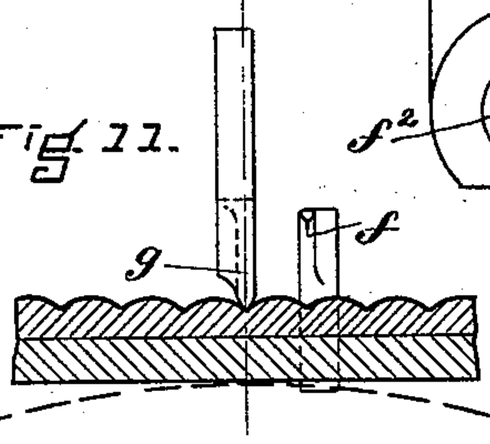
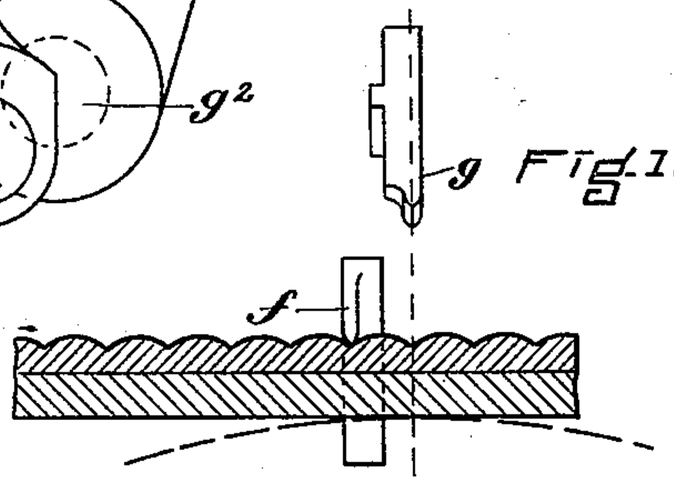


Fig. 15.



WITNESSES.
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by Wright Brown & Quinby
Attys

UNITED STATES PATENT OFFICE.

PETER A. COUPAL, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE GOODYEAR SHOE MACHINERY COMPANY, OF PORTLAND, MAINE.

MACHINE FOR INDENTING SURFACES.

SPECIFICATION forming part of Letters Patent No. 560,976, dated May 26, 1896.

Application filed January 20, 1896. Serial No. 576,073. (No model.)

To all whom it may concern:

Be it known that I, PETER A. COUPAL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Indenting Stitched Surfaces, of which the following is a specification.

This invention has for its objects to provide a simple, rapidly-operating, and conveniently-adjustable machine for indenting the exposed surfaces of welts of welted boots and shoes and to divide or indent the stitches of the seam connecting the welt with the outer sole.

The invention consists in a stitch-indenting machine comprising a work-support and two independent indenting-tools adapted to make two marks side by side on the exposed surface of a welt, one of said tools having an indenting movement, while the other has an indenting movement and is movable laterally, so that it serves also as a feed-dog.

The invention also consists in certain improvements incidental to the general purposes of my invention, all of which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top view of a machine embodying my improvements. Fig. 2 represents a section on line 2 2 of Fig. 1. Fig. 3 represents a side elevation. Fig. 4 represents a section on line 4 4 of Fig. 1. Fig. 5 represents a section similar to Fig. 4 from an opposite point of view. Fig. 6 represents a section on line 6 6 of Fig. 5. Fig. 7 represents a front elevation, the work-supporting wheel being removed and its shaft shown in section. Figs. 8 to 15, inclusive, are views representing different stages of the operation.

The same letters of reference indicate the same parts in all the figures.

In the drawings, a represents the supporting-frame, having bearings in which is journaled the driving-shaft b.

d represents the work-supporting wheel or disk, having a peripheral shoulder d', which serves as a rest or gage for the edge of a sole e. Said wheel is mounted on an idle-shaft c, which is journaled in a vertically-movable bearing c', pressed upwardly by a spring c^3, and provided with means, such as a rod c^2, sliding in a fixed guide c^4, and a treadle (not shown) connected by a link c^{14} with said rod, whereby the spring may be drawn downwardly to permit the wheel to drop for the insertion and removal of the work.

f and g represent two indenting-tools, which are arranged to press downwardly upon and indent the exposed portions of the stitches that connect the welt to the sole e. The tool g is mounted on an arm g', which is affixed to a rock-shaft g^2, journaled in a fixed bearing g^3 on the supporting-frame. Said arm is oscillated by means of a cam-groove g^4 in a disk g^5, affixed to the driving-shaft, a bell-crank lever g^6, pivoted at g^7 to the supporting-frame and having on one arm a trundle-roll entering the cam-groove, and a link g^8, connecting the other arm of the said lever to the arm g'. The oscillating movements thus imparted to the arm g' cause the tool g to rise and fall and thus alternately bear upon and recede from the welt. The tool f has rising and falling movements similar to those of the tool g and in addition has lateral movements, which cause it to act first at one side and then at the opposite side of the tool g, the mechanism for imparting these movements to the tool f being as follows: Said tool is mounted on an arm f', which is affixed to a rock-shaft f^2, journaled to rotate and adapted to move endwise in fixed bearings f^3 f^4 on the supporting-frame, said shaft having flanges f^5 f^5 between said bearings. f^6, Figs. 2 and 7, represents a yoke which bears on the rock-shaft f^2 between said flanges, said yoke having a groove f^7, which receives a roll or stud f^8, engaged with one arm, f^9, of a two-armed lever, the other arm, f^{10}, of which has a roll f^{15} engaged with a cam-groove f^{12} in a disk f^{13} on the driving-shaft. The lever f^9 f^{10} is pivoted at f^{14} to the supporting-frame and is oscillated by the cam f^{12}, imparting a back-and-forth longitudinal motion to the shaft f^2 and a lateral motion to the tool f, whereby the latter is located first at one side and then at the opposite side of the tool g. The said tools and the arms f' and g', supporting said tools, are formed and relatively arranged, as shown in Figs. 7, 9, and 13, so that when either tool

is raised or retracted the tool f can move under the tool g and across its path. (See particularly Figs. 9 and 13.) The arm f' is connected by a link f^{17} with one arm of a bell-crank lever f^{18}, which is pivoted at f^{19} to the supporting-frame, the other arm of said lever being engaged with a cam-groove f^{20}, Fig. 5, in a disk f^{21} on the driving-shaft. The lever f^{18} is oscillated by the cam f^{21} and imparts an oscillating movement to the arm f' and causes the tool f to alternately bear upon and recede from the work, the link f^{17} being connected by ball-and-socket or equivalent joints with the lever f^{18} and arm f', so that provision is made for the described lateral movements of the tool f.

The operation is as follows, supposing the tools f g to be in the positions shown in Figs. 1, 3, 7, and 8, the tool f being at the left of the tool g, as viewed in Figs. 7 and 8: The indenting edges of the tools are now supposed to be pressed into the divisions of two adjacent stitches, the tools being separated only by the length of one stitch. The tool f is then retracted to the position shown in Figs. 9 and 10, the tool g remaining in engagement with the work, this movement of the tool f clearing it from the path of the tool g. The tool f is then moved laterally under the tool g to a position at the right of the latter, as shown in Fig. 11, the two tools being separated by a space equal to the length of a stitch. The tool f then descends upon the work and enters and suitably marks the next stitch division, as shown in Fig. 12. The tool g is then retracted, the tool f remaining on the work, as shown in Figs. 13 and 14, the tool g being now in position to permit the tool f to again pass under it. The tool f is then moved to the left, while engaged with the work, to the position shown in Fig. 15, thus feeding the work a distance equal to the length of two stitches, after which the tool g descends upon the work, as shown in Fig. 8, and the above-described operation is repeated. It will be seen that each tool indents the work independently of the other, the tool f acting to both feed and indent, while the tool g has no lateral movement and only indents.

I have provided mechanism for adjusting the length of the feed movements of the tool f to adapt the same to the length of the stitches, said mechanism, as here shown, comprising a lever i, pivoted at i' to the frame of the machine, and a link i^2, connecting said lever with the stud f^8, which connects the lever-arm f^9 with the yoke f^6 on the feed-tool-carrying shaft f^2, said stud being movable in a slot f^{20} in said arm and in a groove f^7 in the yoke. A movement of the lever i in the direction indicated by the arrow in Fig. 1 will move the stud f^8 farther from the pivot of the lever-arm f^9, thus increasing the length of the feed movement imparted by said arm to the shaft f^2 and tool f. A movement of the lever i in the opposite direction decreases the length of the said feed movement. The lever i is provided with a latch i^3, which is adapted to engage either one of a series of holes i^4 in a fixed segmental plate i^5, the lever i being thus locked in any desired adjustment.

I do not limit myself to the described details of mechanism, as the same may be variously modified without departing from the spirit of my invention, the essential characteristic of which is the two tools adapted to mark the work independently at two different points, one moving back and forth across the other to feed the work. By thus marking the work at two points by two independent tools I not only secure greater rapidity of operation than when two tools coöperate in making one and the same mark or indentation, but I also enable the machine to be more accurately and conveniently adjusted to the length of the stitches.

I am aware that a stitch-indenting machine having two indenting-tools, each having a work-indenting movement and one having also a work-feeding movement, is not new, said tools being arranged and operated so that each indentation is made by the conjoint action of the two tools, the feeding-tool having a movement equal only to the length of one stitch. The machine therefore makes but one indentation during each rotation of the driving-shaft of the machine. I am the first, so far as I am aware, to employ two tools, one of which has a work-feeding movement equal to the length of two stitches and is adapted to move back and forth across the other tool, so that the feeding-tool makes its indentation, carries the indented portion across the path of the other tool a distance equal to the length of two stitches, and leaves the work in position to be indented by the other tool at a distance from the first-mentioned indentation equal to the length of one stitch, the result being a separate indentation by each tool and two indentations for every rotation of the driving-shaft.

I claim—

1. A stitch-indenting machine comprising a work-support, two independent indenting-tools arranged to make alternating indentations, and mechanism for operating said tools, said mechanism having provisions for moving one of the tools laterally while in contact with the work, a distance equal to the length of two stitches.

2. A stitch-indenting machine comprising a work-support, an indenting-tool, mechanism for moving said tool toward and from the work-support, an indenting and feeding tool, and mechanism for operating it, said mechanism having provision for moving the said tool first toward the work-support while separated from the other tool by the length of one stitch, then laterally a distance equal to the length of two stitches to feed the work, and finally back to the starting position, whereby the indentations formed by the two tools are caused to alternate.

3. A stitch-indenting machine comprising

a work-support, an indenting-tool, mechanism for moving said tool toward and from the work-support, an indenting and feeding tool, and mechanism for moving the same toward and from the work-support and laterally back and forth across the path of the first-mentioned tool a distance equal to the length of two stitches.

4. A stitch-indenting machine comprising a work-support, an indenting-tool, mechanism for moving said tool toward and from the work-support, an indenting and feeding tool, mechanism for moving the same toward and from the work-support and laterally back and forth across the path of the first-mentioned tool, and an adjusting device for varying the length of the said lateral movement.

5. A stitch-indenting machine comprising a work-support, two rock-shafts journaled in bearings on the frame of the machine, one of said shafts being longitudinally movable, arms affixed to said rock-shafts, indenting-tools affixed to said arms, the said tools and arms being formed and relatively arranged to permit one tool to move laterally back and forth across the path of the other, mechanism for oscillating one of said rock-shafts, and mechanism for oscillating and longitudinally reciprocating the other rock-shaft.

6. A stitch-indenting machine comprising a work-support, two rock-shafts journaled in bearings on the frame of the machine, one of said shafts being longitudinally movable, arms affixed to said rock-shafts, indenting-tools affixed to said arms, the said tools and arms being formed and relatively arranged to permit one tool to move laterally back and forth across the path of the other, mechanism for oscillating one of said rock-shafts, mechanism for oscillating and longitudinally reciprocating the other rock-shaft, and an adjusting device for varying the reciprocating movement of the last-mentioned rock-shaft.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 9th day of January, A. D. 1896.

PETER A. COUPAL.

Witnesses:
C. F. BROWN,
A. D. HARRISON.