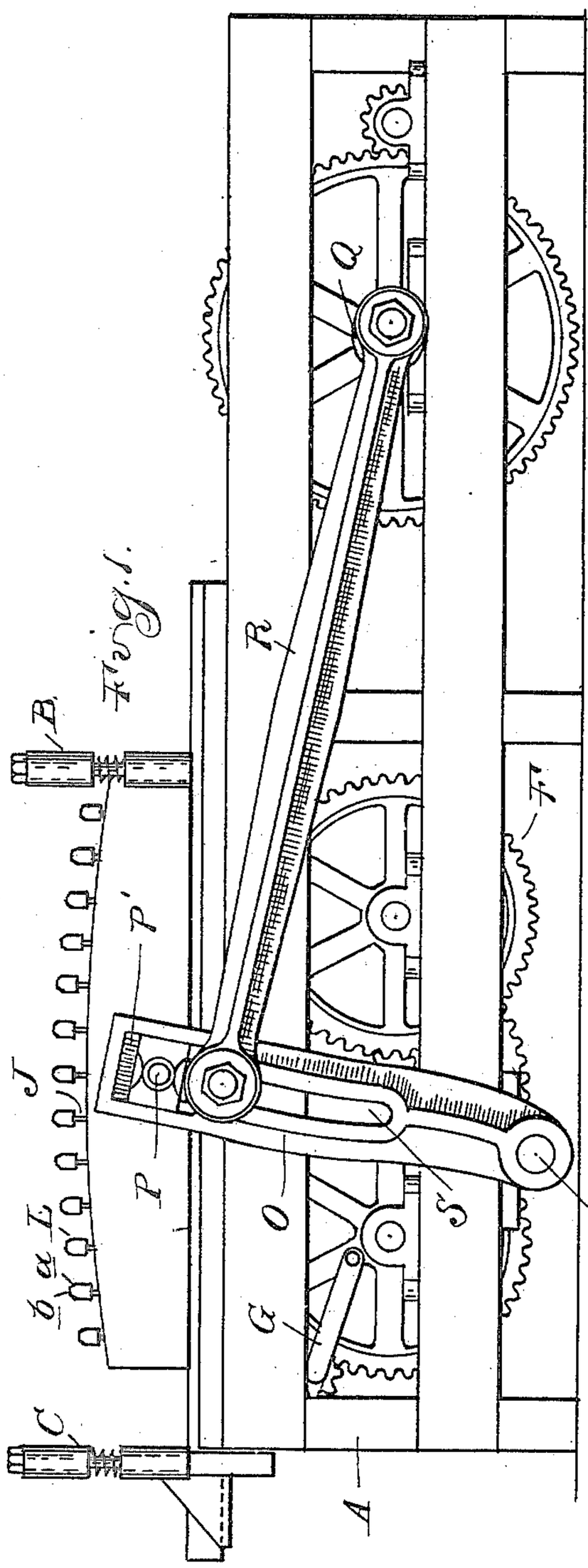
No. 668,037. Patented Feb. 12, 1901.

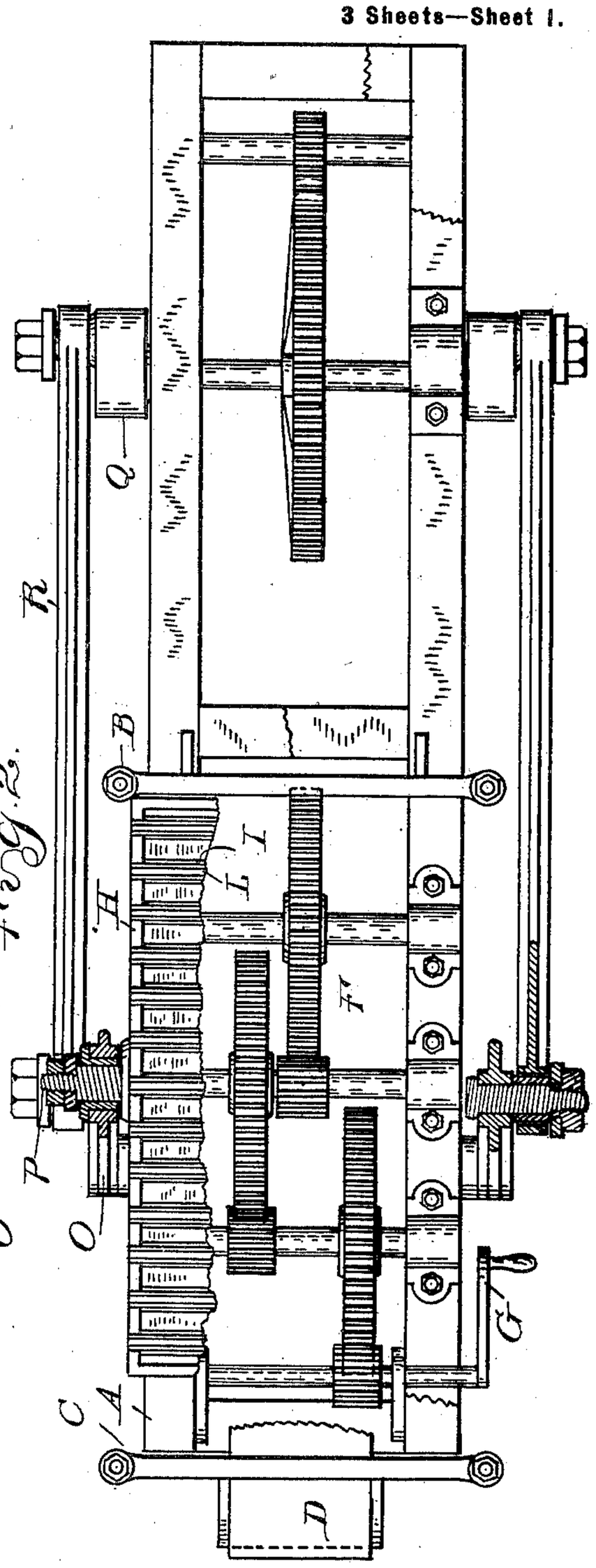
# F. H. CROUL.

## LEATHER STRETCHING MACHINE.

(Application filed Sept. 25, 1899.)

(No Model.) 3 Sheets—Sheet 1.




Witnesses
H. C. Smith.
Phil. D. Dogherty

Inventor
Frank H. Croul.
By Wm. R. Hopkins & Son,
Attys

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## LEATHER STRETCHING MACHINE.

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(No Model.) 3 Sheets—Sheet 2.

Fig. 3.

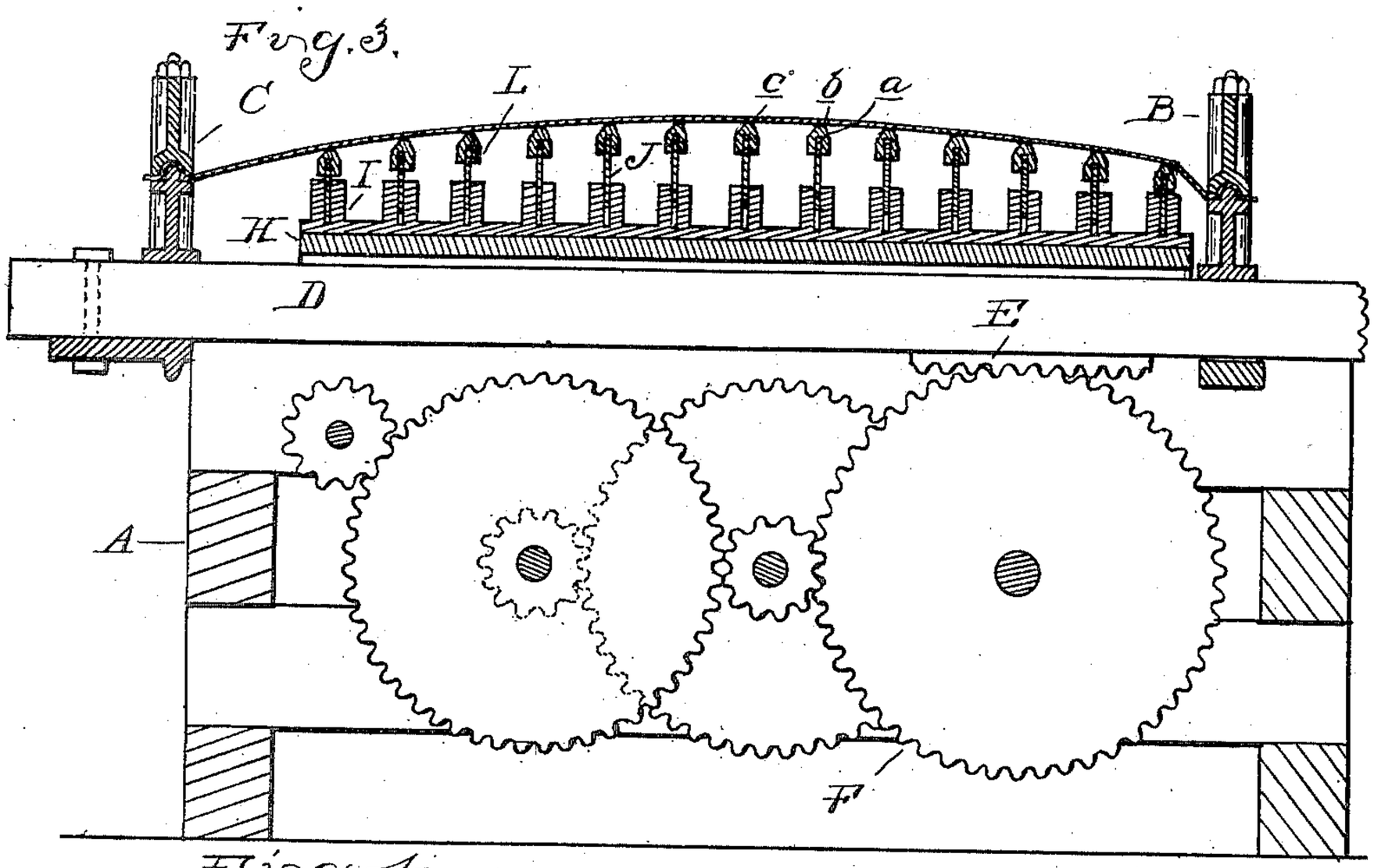
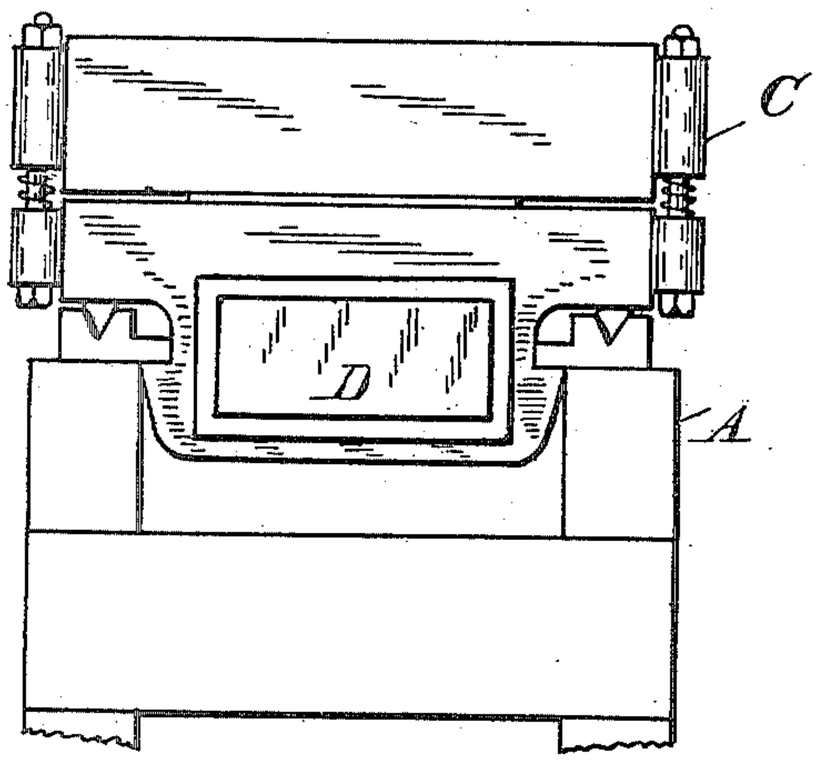



Fig. 4.




Witnesses
H. C. Smith.
M. B. Dogherty.

Inventor
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By Wm. D. Spragues & Abbys.
Attys.

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Fig. 5.

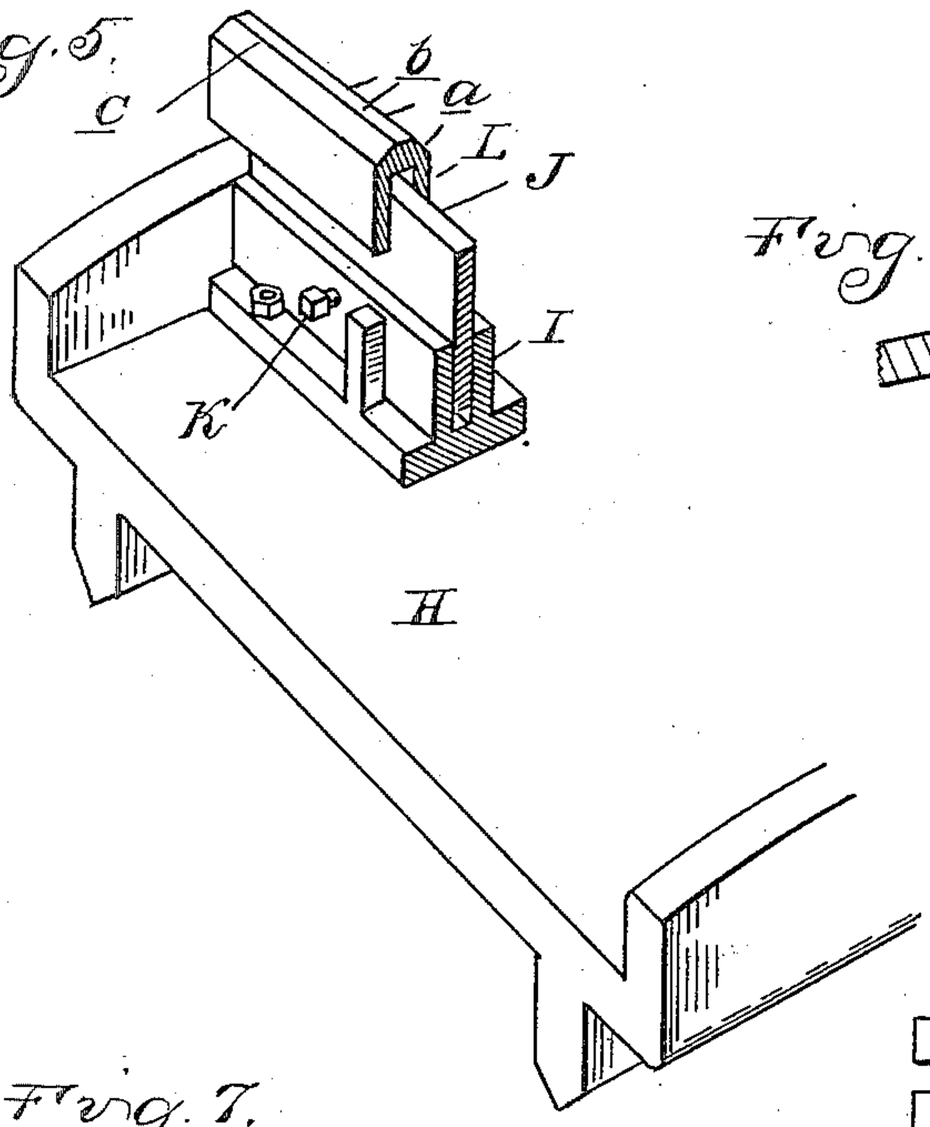



Fig. 6.

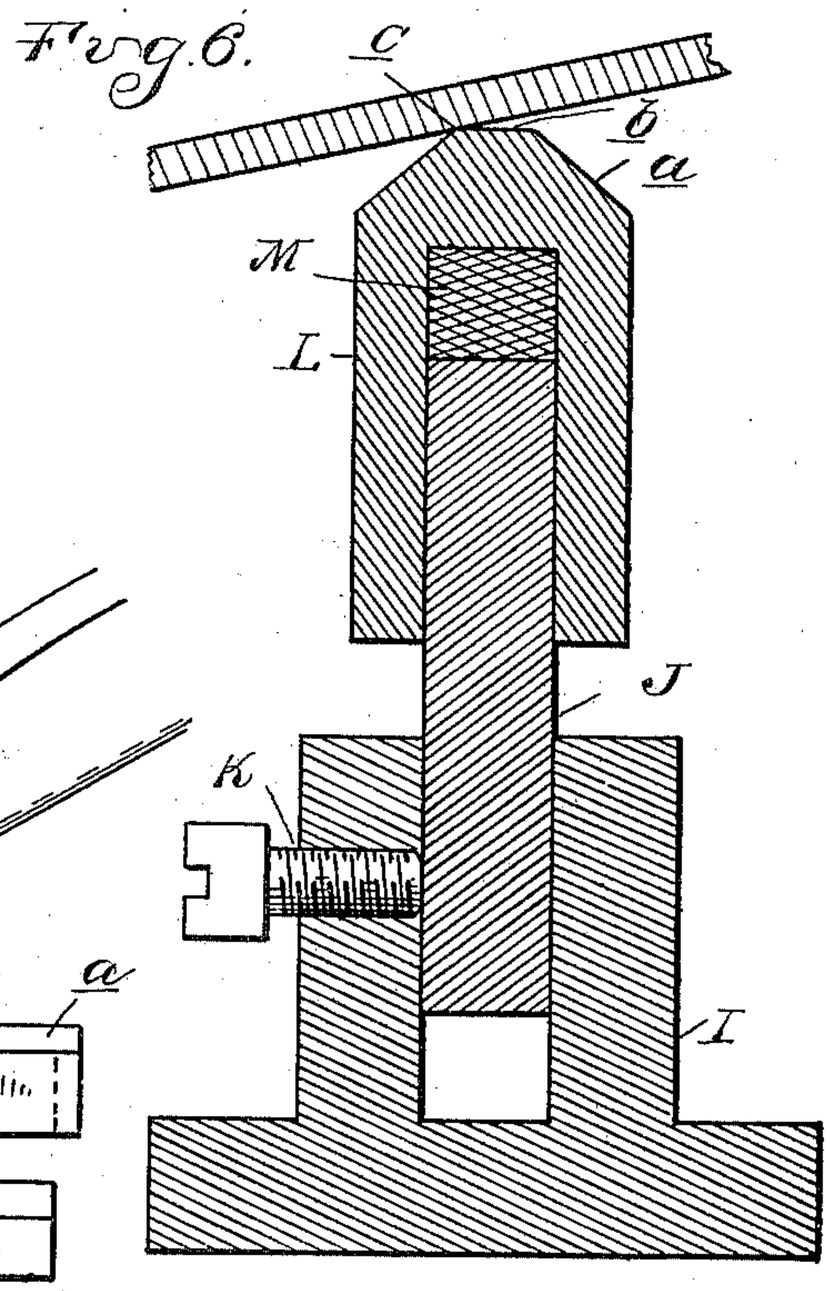
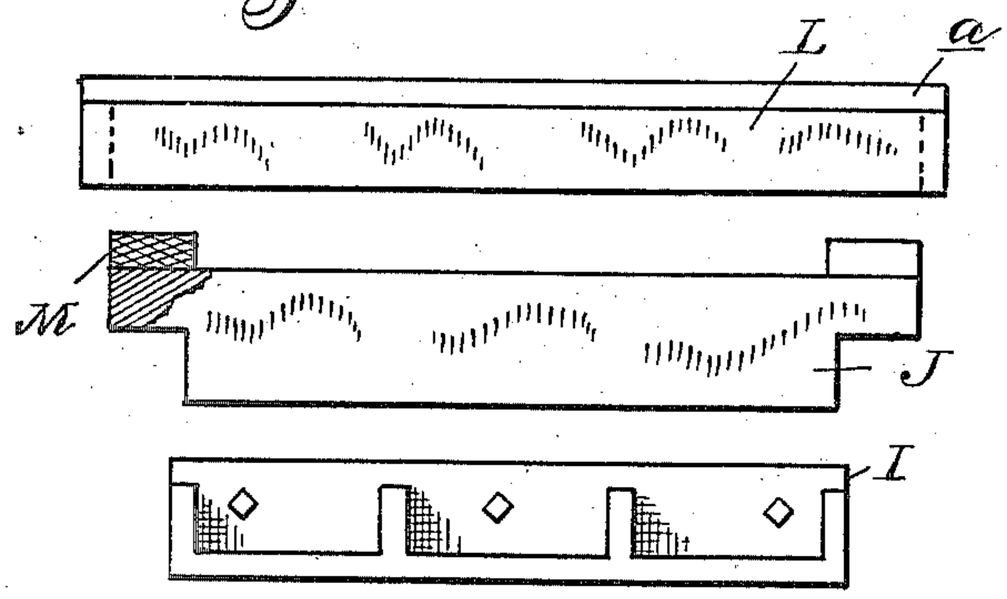



Fig. 7.




Witnesses
H. C. Smith.
M. A. Dogherty.

Inventor
Frank H. Croul
By Mc Cathran Bros, Attys.

# UNITED STATES PATENT OFFICE.

FRANK H. CROUL, OF DETROIT, MICHIGAN.

## LEATHER-STRETCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 668,037, dated February 12, 1901.

Application filed September 25, 1899. Serial No. 731,627. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK H. CROUL, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Leather-Stretching Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the construction of a leather-stretching machine, and particularly in the construction of the scraper device whereby it may be readily adjusted to different classes of work and whereby it produces a more finished surface upon the scraped leather than machines heretofore used.

The invention further consists in the construction, arrangement, and combination of the various parts, as more fully hereinafter described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my improved machine. Fig. 2 is a top plan view thereof, partly in section. Fig. 3 is a longitudinal section through the machine. Fig. 4 is an end elevation. Fig. 5 is a perspective view of one end of the scraper frame or bed, showing one of the scrapers in sectional perspective. Fig. 6 is an enlarged section through one of the scrapers, and Fig. 7 is a detached elevation of the parts comprising the scraper and its support.

A represents a suitable frame in which the operating parts are supported. Stationarily supported upon the top of the frame is a clamp B, which is adapted to grasp one end of the hide or piece of leather to be stretched. C is a complementary clamp for the other end of the hide or piece of leather, and this is supported upon the beam D, which is supported in suitable guides in the frame of the machine. The clamp C is adapted to be moved to and from the clamp B by any suitable means. I have shown the beam D provided with a rack-bar E and a train of gears F, one of which meshes with the rack-bar and another of which is provided with a suitable crank G for operating the same.

On the frame of the machine are suitable guides in which slides the scraper frame or table H, which is shown in Fig. 5 in detail. This frame or table operates between the pairs of clamps referred to and carries a series of scraping bars or blades which are adapted to stretch the hide or leather while under tension while being held in the clamps. These scraper-blades I preferably make as follows: Upon the table or bed H, I secure a series of vertical flanges I, arranged in pairs a suitable distance apart and spaced between each pair, forming a groove or socket in which the ribs or fins J are supported. They are vertically adjustable by any suitable means—such, for instance, as by the clamp-screws K. (Shown in Figs. 5 and 6.) Upon the top of each rib or standard J is a cap L, preferably bifurcated, as shown, so as to slide down and fit upon the top of the standard J, as plainly shown in Fig. 6. Between the top of the standard and the under face of the cap I preferably arrange a spring, usually in the nature of a piece or block of rubber, as shown at M in Fig. 6, this rubber being sufficiently hard to slightly yield when the pressure becomes too great in use. The scraping-face I preferably form, as shown in the drawings, by the two bevel-faces *a* upon opposite sides and the flat face *b* upon the top, forming the obtuse-angled scraping edge *c*. But one of these angled scraping-faces is in use on each scraper blade or cap; but by making a pair of these scraper-faces with this construction I am enabled to reverse the cap when one angle of the cap has worn off and use the other. These caps I preferably make of brass, as I find I get the best result in working the leather with such a cap. I also find that an angled face for scraping gives me a better result than a rounded face, and an obtuse angle is better than an acute, because an acute angle is apt to cut the hide off if proper tension is put upon it in stretching. A series of these scraping-blades thus constructed I arrange side by side, with their upper faces in a curved line which is usually substantially the arc of a circle, as plainly shown in Fig. 1, rising above the plane upon which the hide is clamped at the ends. By arranging them this way I am able to get the independent scraping action of each blade separately upon the under face of the hide, and its angled face will not only scrape and stretch the hide, but

will slightly bend and work it, as will be readily understood from an inspection of the drawings.

The scraper-frame is reciprocated in any suitable manner; but I prefer to employ the following devices: O represents rock-arms journaled upon the studs O′ in the sides of the frame and extending at their upper ends beside the scraper-frame. On the scraper-frame are wrist-pins P, engaging in an elongated bearing P′ in the upper end of the rock-arms. Q is the crank-shaft, driven from any suitable source of power and having connecting-rods R connected to the rock-arms O intermediate their ends. This connection is made in the slot S and is adjustable therein, so as to vary the length of stroke of the arms.

The parts being thus constructed and arranged, their operation is as follows: The operator clamps one end of the hide in the clamp B and the other end of the hide in the clamp C. The adjustable clamp is then moved away from the stationary clamp by the turning of the crank G until suitable tension is put upon the hide, which is thus stretched over the scraper-bars, as shown in Fig. 3. The operator sets the machine in motion and reciprocates the scraper-blades beneath the hide, scraping the under side thereof and stretching it, and after the first stretching takes place the movable clamp is adjusted farther away and stretching resumed until the hide is stretched substantially to its elastic limit, when it is removed from the machine and a new one inserted in its place.

It will be observed that my scraping is done by an angle or edge *c* on the scraper which projects into the plane of the hide stretched thereover and is formed by arranging the two faces of the scraper which form the angle *c* so that they will stand at an acute angle to the plane of the surface of the hide to be scraped.

What I claim as my invention is—

1. In a leather-stretching machine, the combination of a bed, a rigid scraper-frame thereon, a series of scraper-blades supported thereon a spring-backing for each blade and means for moving the scrapers in relation to the clamped hide.

2. In a leather-stretching machine, the combination of the leather-clamps, a series of scraper-blades between, and means for effecting a relative movement between the clamped leather and blades, guides in which the scraper-blades are adjustably supported and means for holding the blades in their adjusted positions.

3. In a leather-stretching machine, the combination of the leather-clamps, a scraper-frame between, means for effecting a relative movement between the frame and clamped leather and scraper-blades on the frame comprising a series of standards on the frame, and detachable scraping-caps on the standards, said caps having an obtuse-angled outer scraping edge.

4. In a leather-stretching machine, the combination of the leather-clamps, a scraper-frame between, means for effecting a relative movement between the frame and clamped leather, and scraper-blades on the frame, comprising a series of vertically-adjustable standards on the frame, and detachable scraping-caps on the standards, having obtuse-angled scraping edges.

5. In a leather-stretching machine, a scraper-frame, a series of rib-like standards thereon, vertically adjustable, a bifurcated cap slidingly engaging over the top of each standard, and a spring between the cap and standard.

6. In a leather-stretching machine, means for holding the hide, and a scraper device over which the hide is held, comprising rigid scraper-blades having a scraping edge formed by two faces of the blade which extend at an acute angle in relation to the plane of the stretched hide.

7. In a leather-stretching machine, means for holding the hide, a movable scraper device comprising supports and detachable reversible scraper-caps thereon, substantially as described.

8. In a leather-stretching machine, means for holding the hide, a movable scraper device comprising supports, and detachable, reversible caps, having on both sides angled scraping edges, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK H. CROUL.

Witnesses:

JAMES WHITTEMORE,

M. B. O'DOGHERTY.