(No Model.) 2 Sheets—Sheet 1.

J. STÄUBLI.

MACHINE FOR SECURING STRETCHING BANDS TO CARD CLOTHS.

No. 571,985. Patented Nov. 24, 1896.

Fig. 1

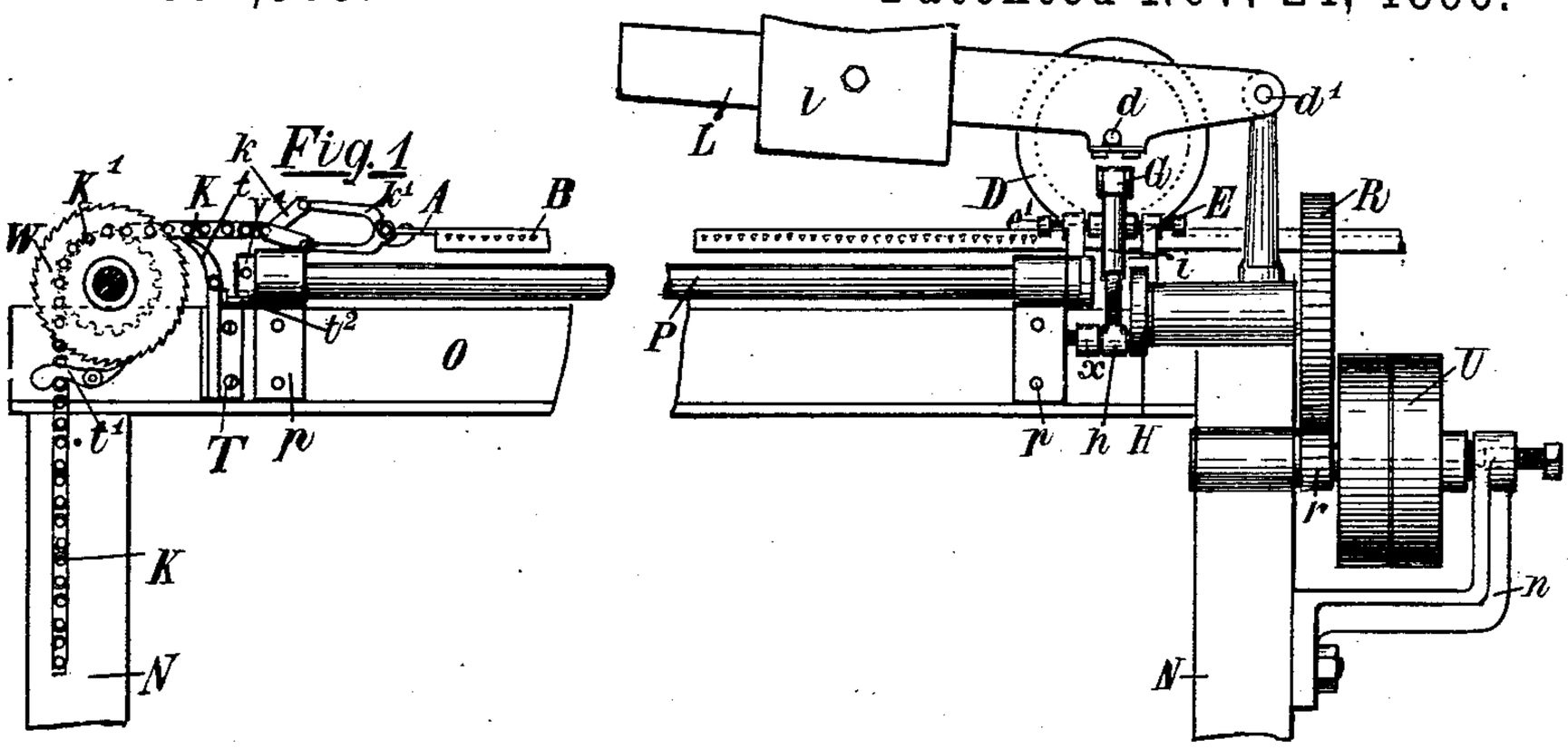

Fig. 3

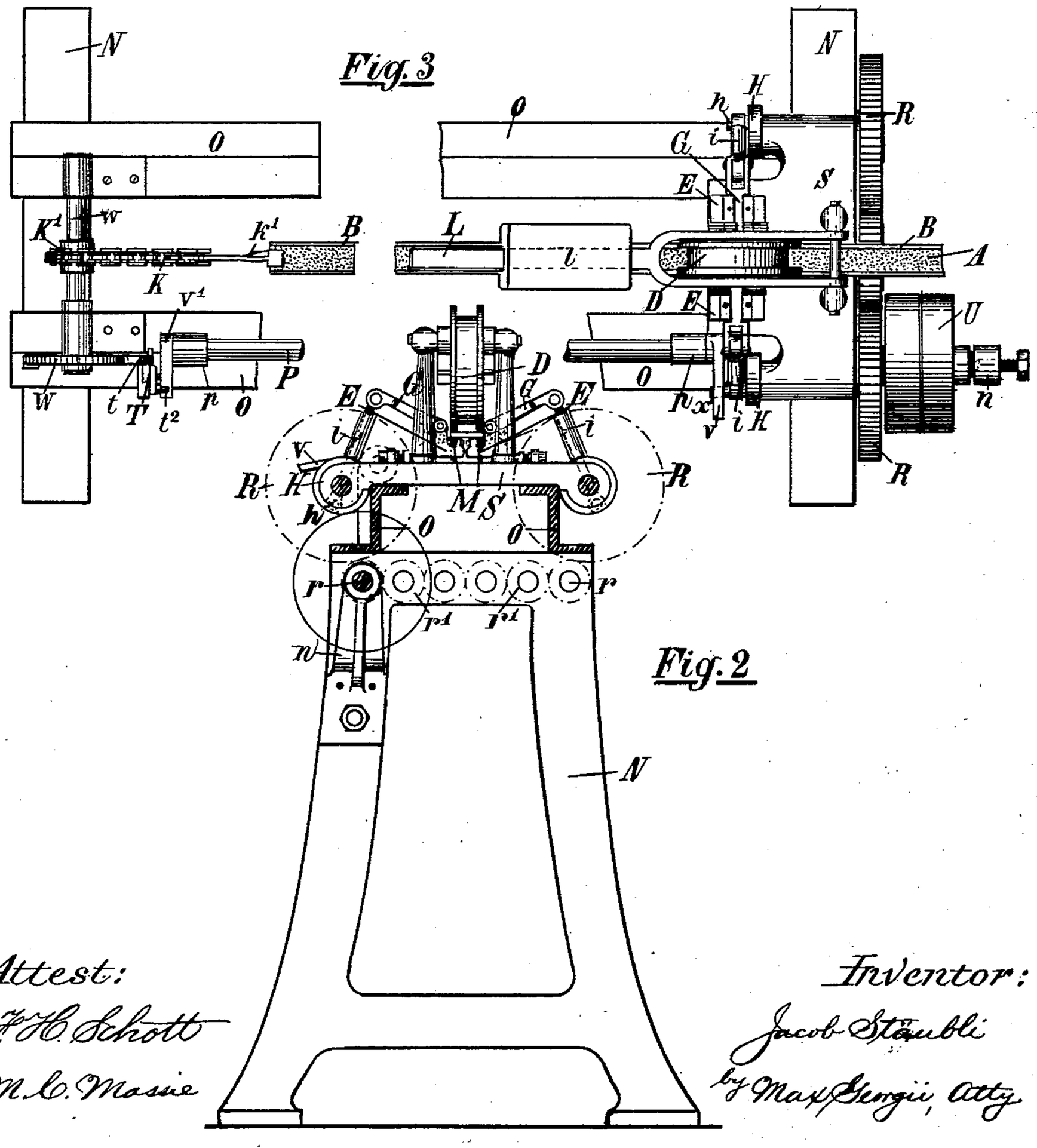

Fig. 2

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Inventor:
Jacob Stäubli
by Max Georgii, Atty.

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Fig. 4

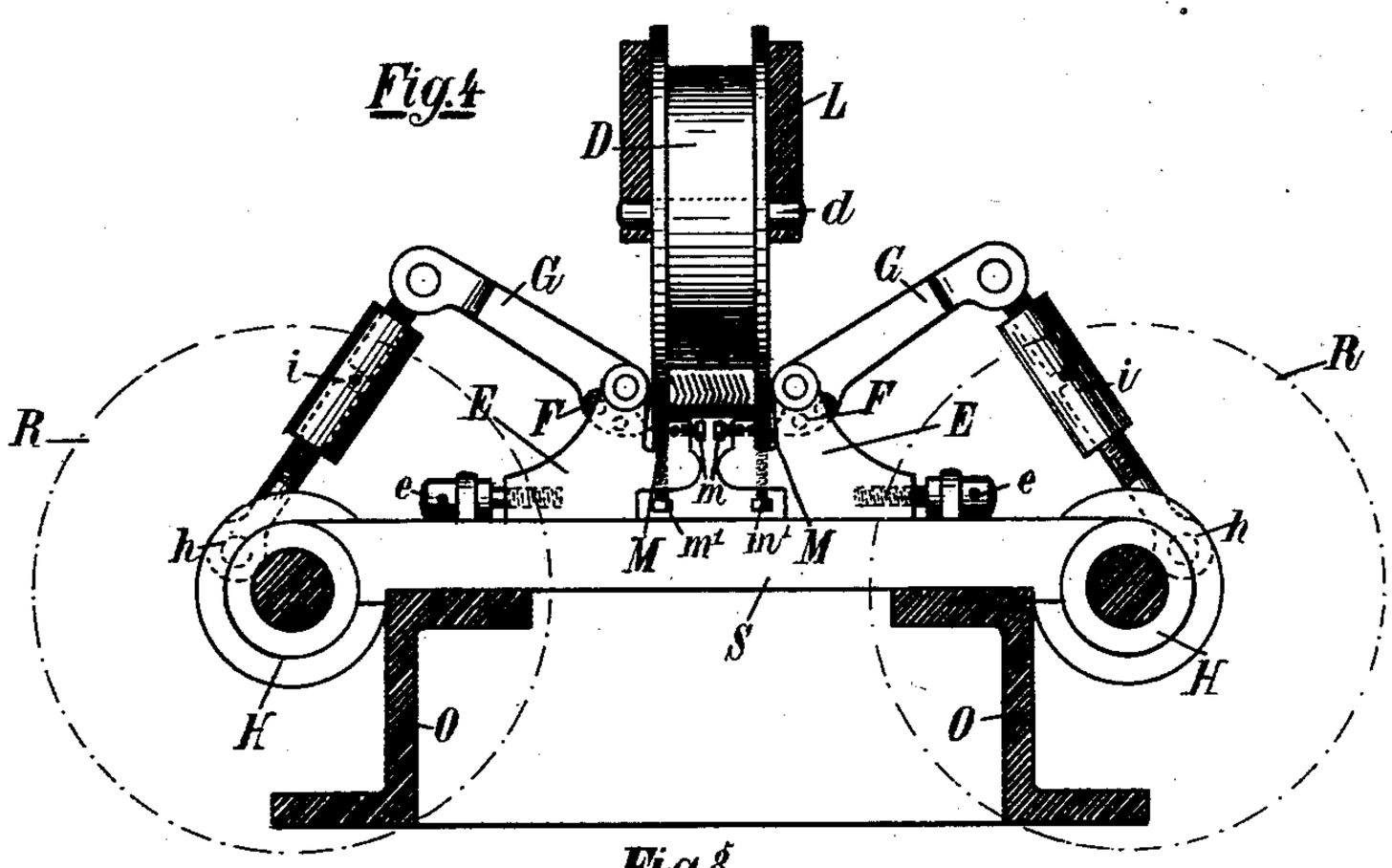


Fig. 8

Fig. 6

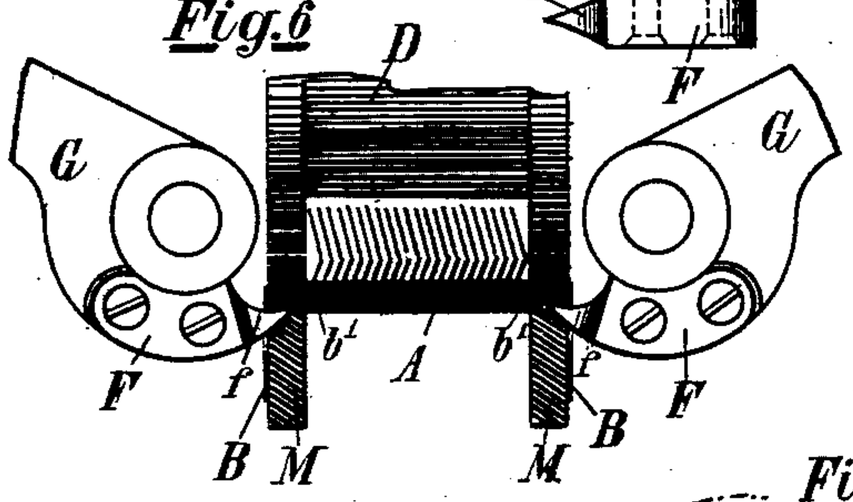


Fig. 7

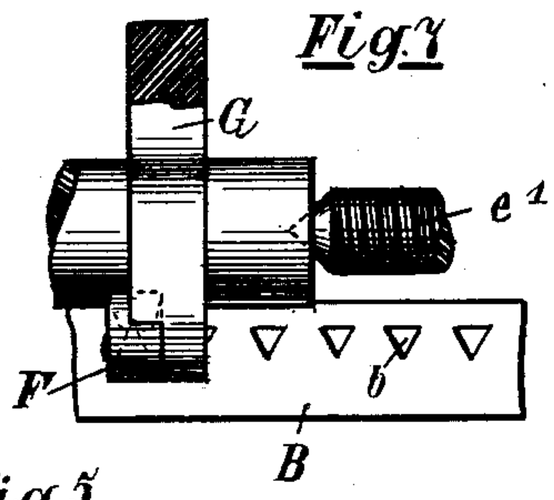
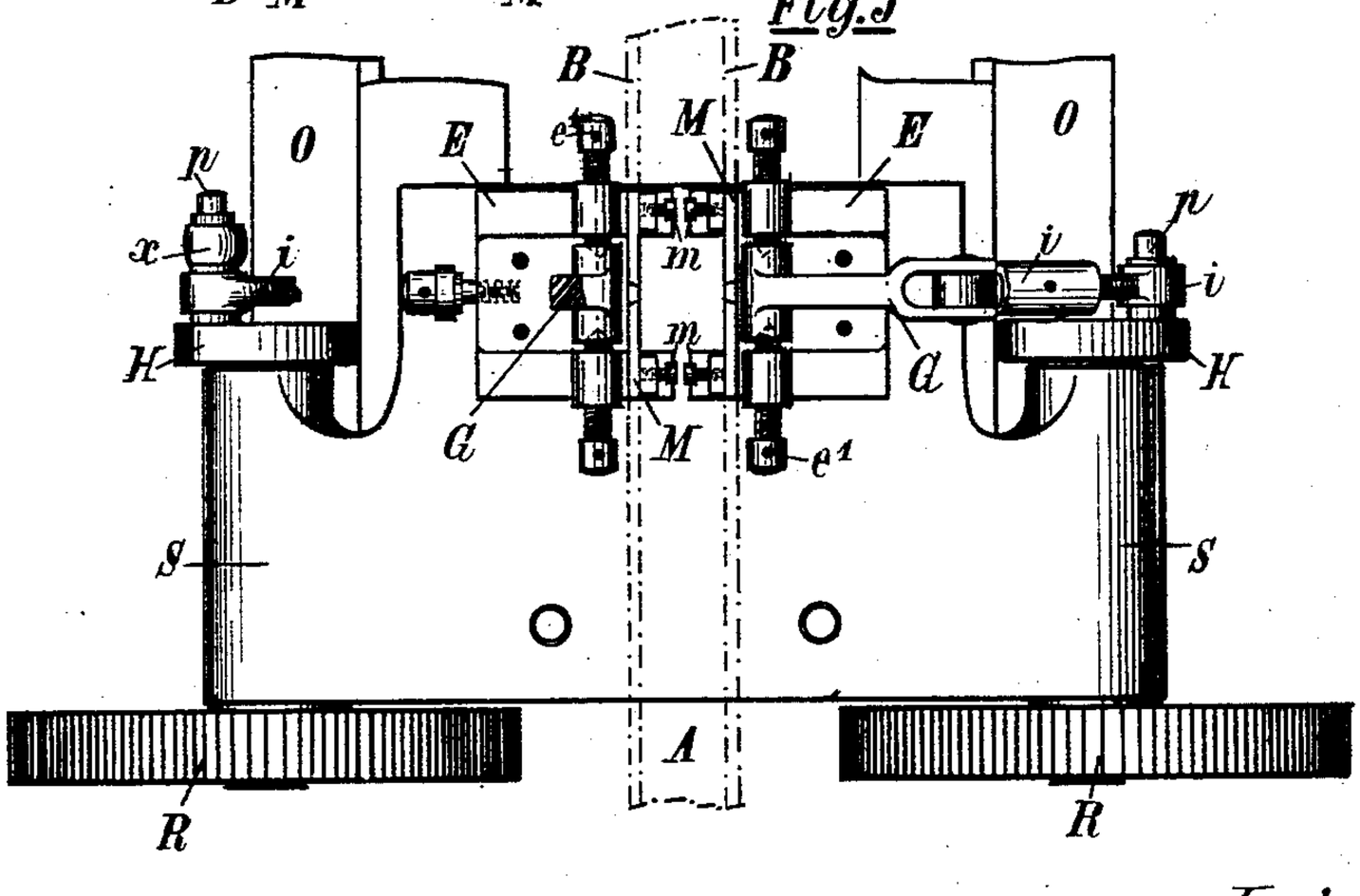


Fig. 5



Attest:

M. C. Massie

F. H. Schott

Inventor:

Jacob Stäubli

by Max Georgii, Atty.

UNITED STATES PATENT OFFICE.

JACOB STÄUBLI, OF CALW, GERMANY.

MACHINE FOR SECURING STRETCHING-BANDS TO CARD-CLOTHS.

SPECIFICATION forming part of Letters Patent No. 571,985, dated November 24, 1896.

Application filed August 9, 1895. Serial No. 558,770. (No model.)

To all whom it may concern:

Be it known that I, JACOB STÄUBLI, a citizen of Switzerland, residing at Calw, in Würtemberg, Germany, have invented a new and useful Improvement in Machines for Securing Stretching-Bands to Card-Cloths, of which the following is a specification.

The present invention consists of a machine by means of which carding-cloths are hemmed with stretching-bands of soft steel in such a manner that the latter passes over the top of the cloth, and a continuous rib of the steel band is pressed into the top of the cloth, and the cloth is further securely held at the bottom by the steel bands by means of dovetails stamped from the steel bands and pressed firmly into the under side of the cloth. After this has been done the cloth is secured to its cover-block by bending the rims of the band about the edges of the cover in a well-known manner.

In the drawings the machine is shown in Figures 1, 2, and 3 in two vertical sections and plan. Figs. 4 and 5 show, on a larger scale, the special arrangement by means of which the pointed dovetails are stamped out of the soft-steel bands and then pressed into the lower side of the cloths. The other views, Figs. 6 to 8, show, on a still larger scale, the special devices for stamping the dovetails *b* from the steel bands B and pressing them into the under side of the cloth.

The stretching-bands B, which are most conveniently made of soft sheet-steel, are first bent in L shape and are placed about the edges of the cloth A so that their shorter sides lie upon the top and grasp the cloth, and the cloth is then laid upon the adjustable tracks M. These tracks M are adjustable up and down and sidewise by means of the set-screws *m* and *m'*, respectively, and are secured to opposite supports E. Directly over these guide-tracks M there is a revoluble roller D, turning on an axis *d*, which is located in a lever L, provided with an adjustable weight *l*, the lever being pivoted at *d'* and the two projecting rims of the roller D pressing the steel cover-bands B firmly against the carding-cloth A and the latter against the tracks M.

In the two supports E, which are likewise adjustable to and from each other by means of the screws *e*, there are rotatably supported angle-levers G by means of the pointed screws *e'*. On the shorter arms of the angle-levers G there are segmental-shaped dies F, (see Fig. 8,) which have on the front side a triangular point *f*, corresponding to the form of the piece *b* which is to be stamped out. The longer forked arms of the lever G are joined to cranks H by means of longitudinally-adjustable turnbuckles *i* and crank-pins *h*, the axes of the cranks H being in bearings in a common plate S and the outer ends thereof being provided with spur-wheels R, which are set in equal uniform and opposite motion by means of the spur-wheel *r*, the transmission-gears *r'*, and belt-pulley U.

The base-plate S is secured to the two cheek-pieces O, which lie upon the uprights N. The driving-shaft of the driving-pulley U (fixed and loose pulleys) and the spur-wheel *r* are located on one side in a bearing on the upright N and on the other in a bearing in a bracket *n*, which is secured to the upright N. At each revolution of the spur-wheels R the crank-disks H also make a revolution, whereby the angle-levers G are moved and, by means of the points *f* of the dies F, cut a three-cornered piece *b* (shown three-cornered in the drawings) from the side walls of the stretching-bands B in such a manner that the base of the triangular piece is left intact with the bands and is bent upward and is pressed with its point firmly into the under side of the carding-cloth A, Figs. 6 and 7. The form of the stamped-out piece *b* may be any other desired than triangular. In the drawings it is assumed that at each revolution of the cranks H a piece *b* is stamped out on both sides and pressed into the under side of the carding-cloth. There can, however, equally well be two or more pieces stamped out on each side simultaneously, for which it is only necessary to provide a corresponding number of points *f* upon the dies F. The forward feeding of the carding-cloth is intermittent and always takes place when the points *f* of the dies F are not engaged with the stretching-bands. The feed motion is secured as follows: One end of the cover-bands is grasped by a pair of tongs *k'*, whose shank ends are connected to a chain K by means of diagonal coupling-links, the chain passing over a sprocket-wheel K'. This sprocket-

wheel K′ is located on a cross-shaft *w*, running in bearings on the cheek-pieces O, and a ratchet-wheel W is located on the end of the shaft *w*. A pawl *t*, located on the slide T, meshes with this ratchet-wheel, as also a second pawl *t′*.

The intermittent feed of the ratchet-wheel W is produced by the up-and-down movement of the slide T. This is produced by means of a pin t^2, located on the slide T, which is lifted a short distance by means of a lever *v′*, located on a shaft P, which is oscillated. The shaft P receives its small oscillating movement from a small lever *v*, secured to its other end by means of a roller *x*, which is lifted by one of the cranks H, the roller *x* being located on a prolongation of the crank-pin *h*. The rising-and-falling movement of the lever *v* continues through only about one-fourth of a revolution of the crank H, and during this time also the intermittent forward feed of the carding-cloth takes place. If during each revolution of the crank only one dovetail on each side is to be stamped out, there will be a forward feed to the extent of one dovetail only. If two, three, or more dovetails are to be stamped out on each side simultaneously, the feed will be to the extent of two, three, or more of these divisions *b*. After the carding-cloth has been hemmed on both sides, top, and bottom in this manner it will be secured to the cover-block rims in a well-known manner by bending the bands B around the cover-block C. The ends of the cloth are also secured by bands in the manner described above, but they are not secured to the cover-block. The steel bands thus secured to the carding-cloth hold remarkably tight and furnish a very good and durable stretching of the same without injury to the material of the cloth.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine for securing stretching-bands to carding-cloths, the combination, with mechanism for feeding the cloth and bands longitudinally, of a punching-die arranged to contact with the bands on the cloth as it is fed along, substantially as set forth.

2. In a machine for securing stretching-bands to carding-cloths, the combination, with mechanism for feeding the cloth and band longitudinally, of a punching-die, and means for intermittently bringing the said punching-die into contact with the bands on the cloth, substantially as set forth.

3. In a machine for securing stretching-bands to carding-cloths, the combination, with mechanism for feeding the cloth and band longitudinally, of a punching-die, a lever carrying the punching-die, and means for oscillating the lever, whereby the punching-die is intermittently brought into contact with the band, substantially as set forth.

4. In a machine for securing stretching-bands to carding-cloths, the combination, with mechanism for feeding the carding-cloth and bands longitudinally, of a roller having flanges, and means for pressing the flanges of the roller against the bands, substantially as set forth.

5. In a machine for securing stretching-bands to carding-cloths, the combination, with mechanism for feeding the carding-cloth and bands longitudinally, of a lever fulcrumed at a fixed point, and a roller mounted in the lever and provided with flanges arranged to contact with the bands, substantially as set forth.

6. In a machine for securing stretching-bands to carding-cloth, the combination, with mechanism for feeding the carding-cloth and bands longitudinally, of a lever fulcrumed at a fixed point, a roller mounted in the lever and provided with flanges, and means for forcing said flanges into contact with the bands, substantially as set forth.

7. In a machine for securing stretching-bands to carding-cloth, the combination, with mechanism for feeding the carding-cloth and bands longitudinally, of a roller provided with flanges, means for forcing said flanges into contact with the bands, a lever mounted at right angles to the direction of travel of the cloth and bands, a die carried by the lever, and means for oscillating the lever to bring the die against and away from the bands, substantially as set forth.

8. In a machine for securing stretching-bands to carding-cloth, the combination, with intermittent feed mechanism for feeding the cloth and bands longitudinally, of an intermittently-actuated die mechanism arranged to act on the band when the feed mechanism is at rest, substantially as set forth.

9. In a machine for securing stretching-bands to carding-cloths, the combination, with a feeding mechanism for feeding the cloth and bands longitudinally, of a pair of dies acting on the bands, and mechanism for intermittently actuating the dies and feeding mechanism, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JACOB STÄUBLI.

Witnesses:
AUGUST B. DRAUTZ,
GUSTAV LAUSTER.