No. 820,975.

PATENTED MAY 22, 1906.

M. A. HOLMES & G. W. ALLEN.

MACHINE FOR SCARFING LEATHER.

APPLICATION FILED FEB. 1, 1904.

3 SHEETS—SHEET 1.

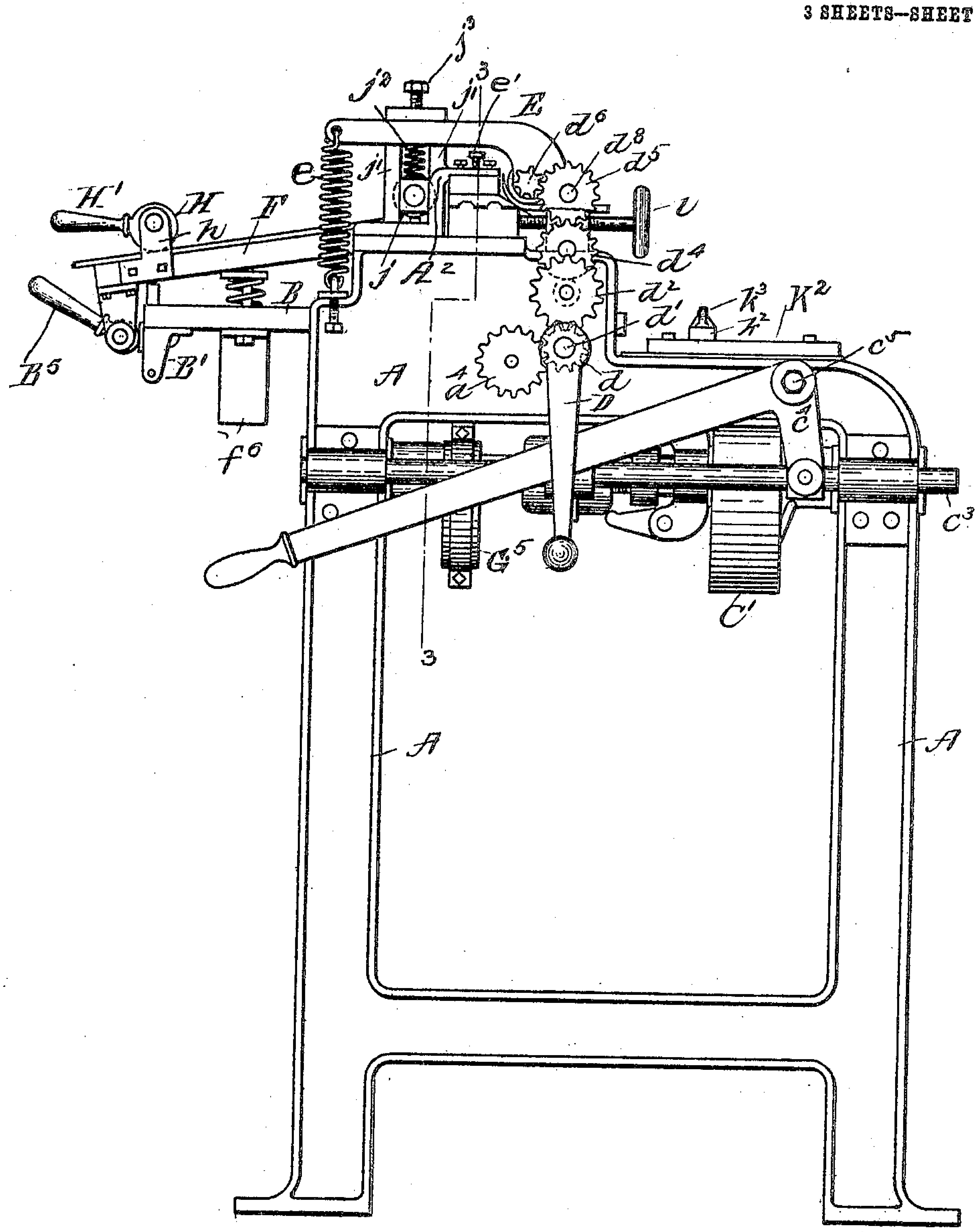

Fig. 1.

WITNESSES.

J. M. Dolan.

M. V. Foley.

INVENTORS

Morton A. Holmes.

George W. Allen

by Churchill, Raymond & Coale

Attys.

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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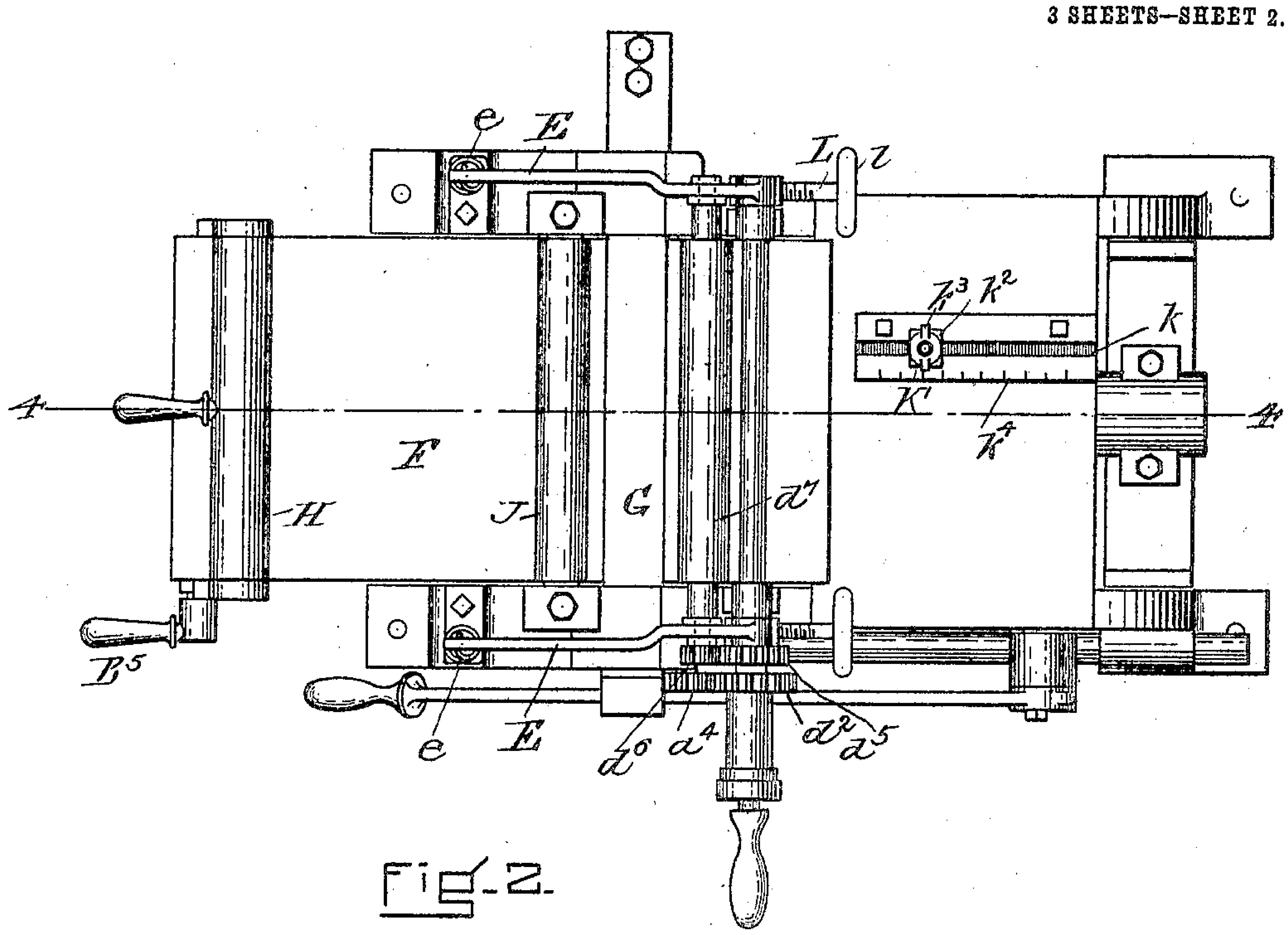
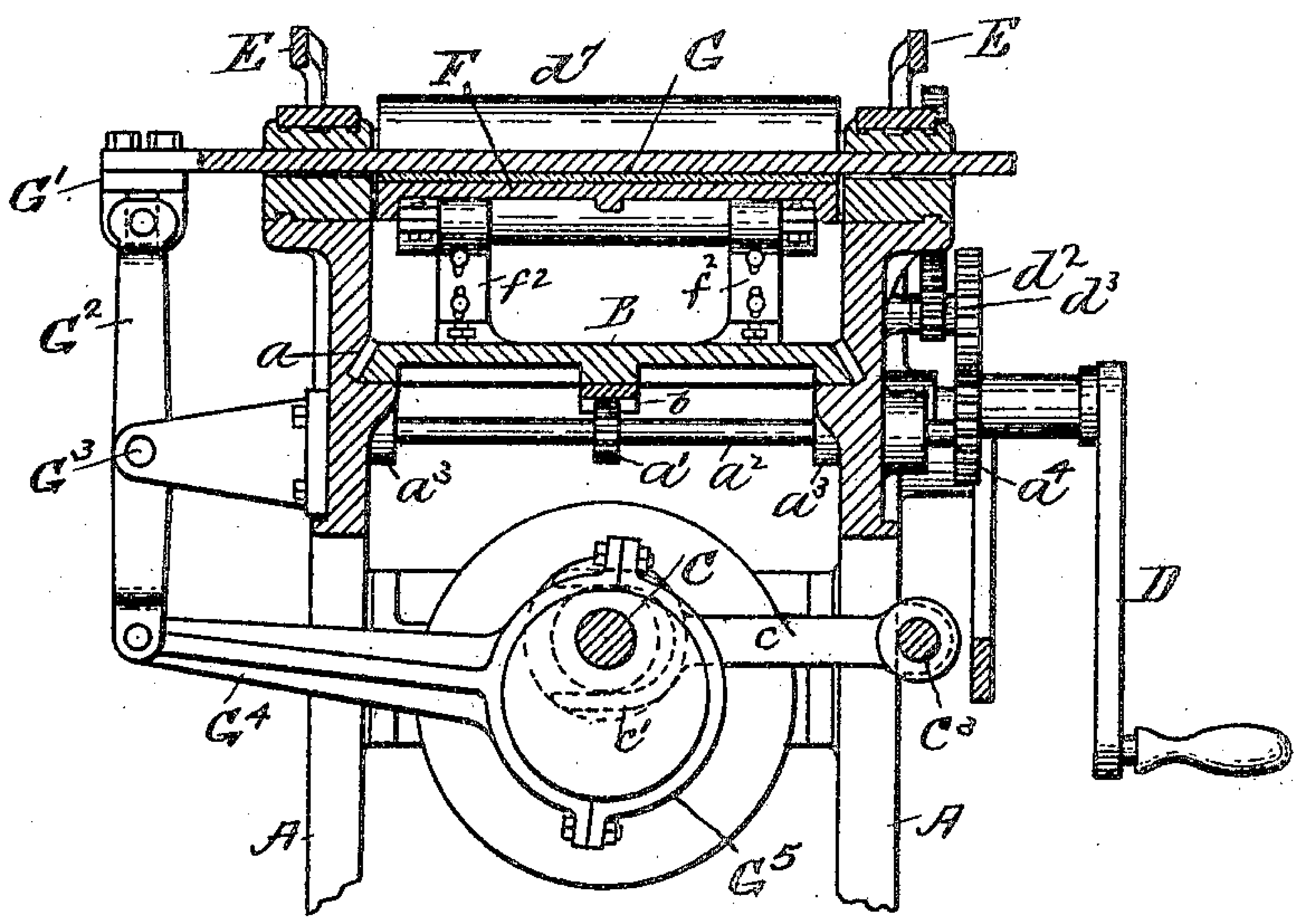


Fig. 2.



WITNESSES.

J. M. Dolan

M. V. Foley.

Fig. 3.

INVENTORS

Merton A. Holmes

Geo. W. Allen

by Charles Raymond Fowler

his Attorney.

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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3 SHEETS—SHEET 3.

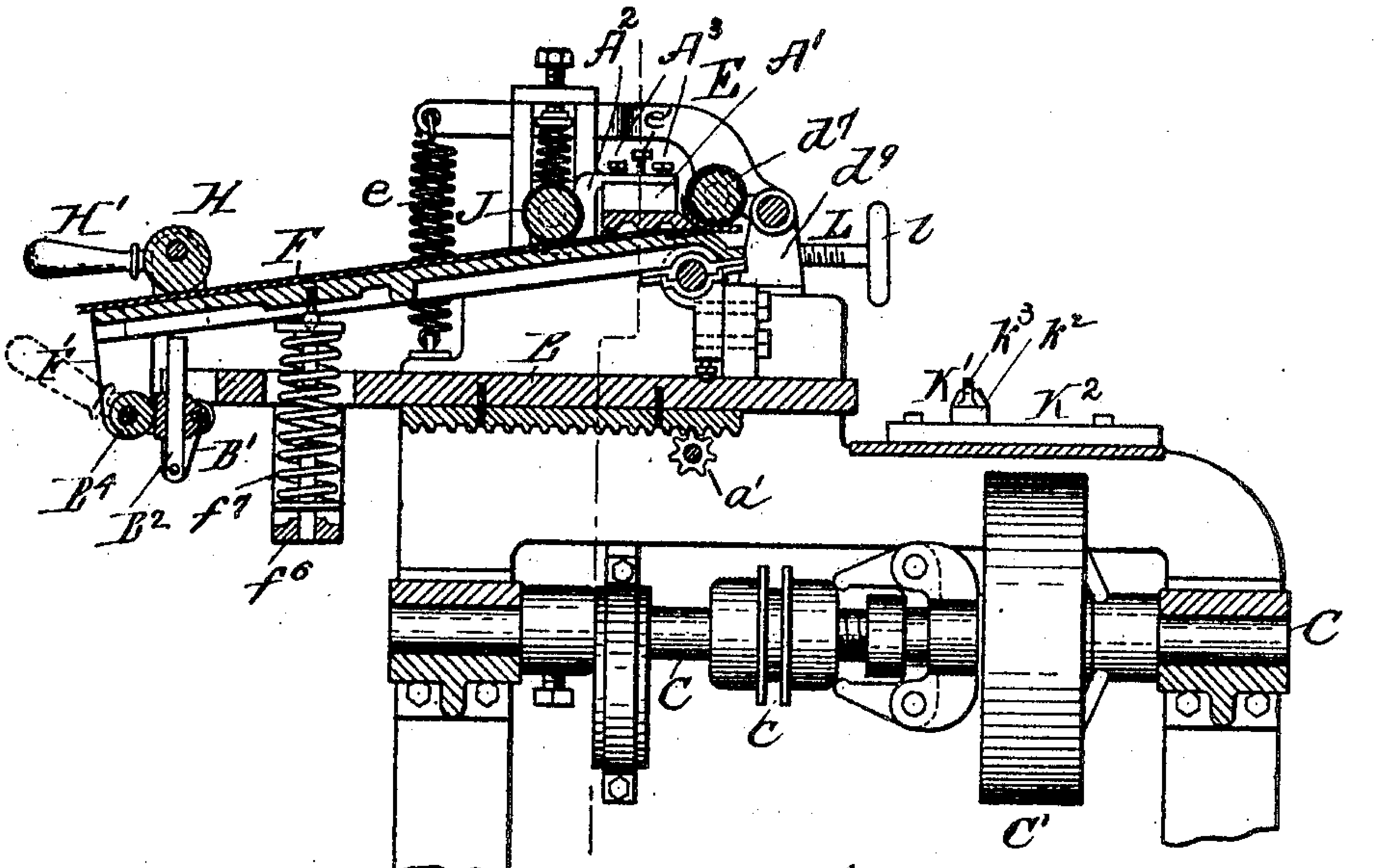

Fig. 4.

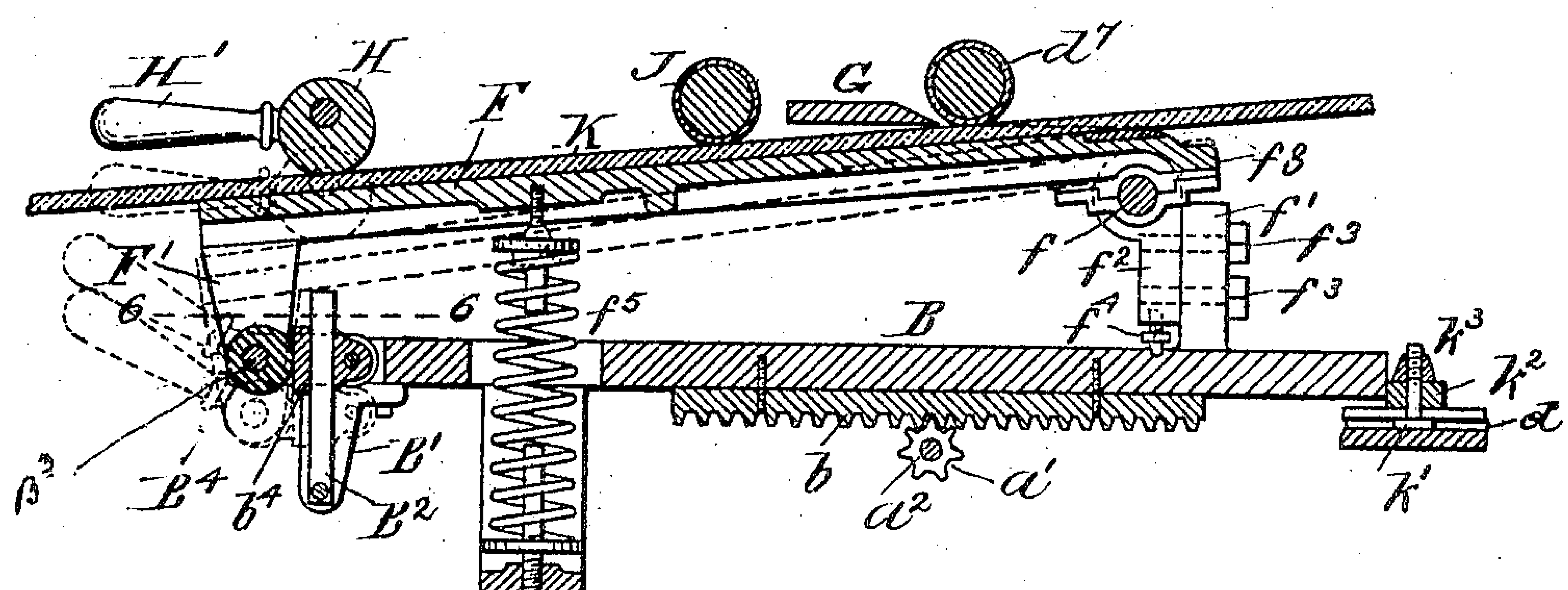

Fig. 5.

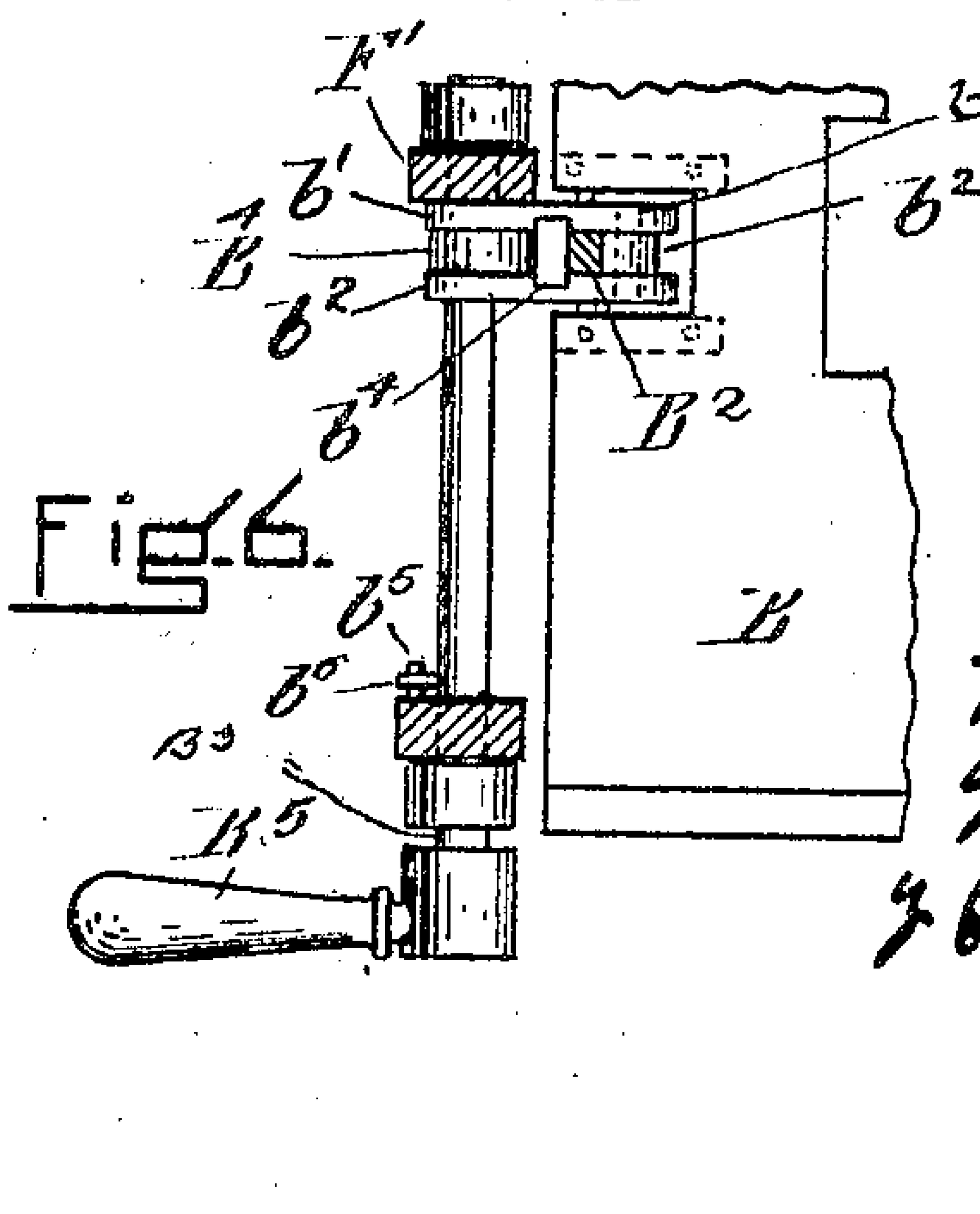

Fig. 6.

WITNESSES.

J. M. Dolan.

M. V. Foley.

INVENTORS

Merton A. Holmes

Roy. W. Allen

by Clarke, Raymond & Coale

their Attorneys.

UNITED STATES PATENT OFFICE.

MERTON A. HOLMES, OF NEWTON, AND GEORGE W. ALLEN, OF EAST BRIDGEWATER, MASSACHUSETTS, ASSIGNORS TO CHARLES HOLMES MACHINE COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

MACHINE FOR SCARFING LEATHER.

No. 820,975. Specification of Letters Patent. Patented May 22, 1906.

Application filed February 1, 1904. Serial No. 191,548.

To all whom it may concern:

Be it known that we, MERTON A. HOLMES, of Newton, in the county of Middlesex, and GEORGE W. ALLEN, of East Bridgewater, in the county of Plymouth, State of Massachusetts, both citizens of the United States, have invented a new and useful Improvement in Machines for Scarfing Leather, of which the following is a specification.

Our invention relates to machines primarily used for scarfing leather, but incidentally useful for shaving or skiving leather, and it relates more especially to a machine in which the relations of the feed and knife may be so adjusted with relation to each other that any desirable length of bevel may be cut upon the edge of the leather and to means whereby the knife is caused to reciprocate so as to cut the leather by a draw or cross cut instead of simply by engagement between its edge and the leather, and it also relates to certain details of construction hereinafter described.

Our invention will be understood by reference to the drawings, in which—

Figure 1 is a side elevation of a machine embodying our invention, Fig. 2 being a plan. Fig. 3 is a cross-section of the operative parts of our machine, taken on line 3 3 of Fig. 4, Fig. 4 being a section on line 4 4 of Fig. 2. Fig. 5 is an enlarged sectional detail showing especially the feeding-table mechanism, and Fig. 6 is a detail of the feed-table clamp.

In the machine now to be described there are three important features—viz., a reciprocating feeding-table by means of which the leather is carried against the knife, means for adjusting the angle of the table to the plane of the knife, so as to adjust the angle of the bevel to be made on the edge of the leather, and the movement of the knife-blade, whereby the leather instead of being fed against a stationary knife, which often results in an uneven cut, especially at the line of final separation of the two leather strips, is cut by a draw cut, which will prevent any wrinkling of the leather when it is presented to the knife, and a smooth clean cut is the result. This draw cut may be given by various means. We prefer, however, the reciprocating blade, as shown in the drawings and described below.

In the drawings our invention is shown in the best form known to us at the present time; but it will be recognized at once by any skilled mechanic who has seen our machine that the movements therein are simple and may be had by other details of mechanism than those shown.

A is the frame, on which is mounted the feeding-bed B and in which is also mounted in suitable bearings the driving-shaft C. The table B is mounted to slide in ways *a* and has on its under side a rack *b*, which engages and is operated to reciprocate the table by a pinion a', mounted on a shaft a^2, hung in bearings a^3 in the frame A below the bed, and carrying at its outer end a gear a^4. The gear is in mesh with a pinion *d*, mounted on a shaft d', carried in suitable bearings on the frame A, and having at its outer end a crank-handle D. This pinion *d* engages a gear d^2 on a stud, also mounted in bearings on the side of the frame A and carrying a pinion d^3, which engages a gear d^4, which in turn engages another gear d^5, meshing with a pinion d^6 on the end of a shaft carrying a pressure-roll d^7. The gear d^5 is mounted on the end of a shaft d^8, carried in suitable bearings d^9, mounted on top of the frame A. On this shaft d^8 are mounted arms E, containing bearings, in which the shaft carrying the roll d^7 is journaled, and the free end of each arm E is connected by a spring *e* with the frame A by an adjustable connection, the purpose of this train of gears being to cause the rotation of the roll d^7 at the same surface speed as the motion of the bed B and at the same time to allow the roll d^7 to yield slightly, if necessary, in smoothing out any irregularities in the leather while presenting the leather to the knife. Adjusting-screws e' in the piece A^2 act as stops to prevent the feed-roll d^7 from being forced so low by the springs *e* as not to leave a passage for the table F and fresh leather. The table F is supported on the bed B to travel therewith and is made adjustable both with reference to the thickness of the leather to be cut and also with reference to the desired length of the bevel to be cut. The table F is hinged upon a pin *f*, running crosswise under the table, and suitably supported on the bed B. (See Fig. 3.)

In order that the table may be adjusted

with reference to the knife, we prefer to make these uprights adjustable, and for this reason have shown each in the drawings as comprising two parts—one the part f', which is cast on the bed, and the other, the part f^2, which carries the bearings for the pin f, is bolted to it by bolts f^3, which pass through slots in the part f' and into the part f^2. To adjust the height of the hinge-pin, we provide adjusting-screws f^4, which turn into the lower end of the part f^2, their lower ends resting on the top of the bed B. When the bolts f^3 are loosened, the screws f^4 may be turned to raise or lower the part f^2, and so raise or lower the hinge-pin.

Near the forward end of the bed B is a spring f^5, the upper end of which bears against the under side of the table F, the lower end of said spring lying in a strap f^6, projecting downward from the under side of the bed B. The spring is preferably provided with centering-rods f^7. Upon the advancing or front end of the bed B there are two arms B′ extending downward, and to their lower ends is pivoted a clamping-strip B^2. This clamping-strip B^2 forms part of a clamp by means of which the front end of the table F is maintained in a raised or lowered position. The other portions of this clamp are suspended in arms F′, which project downward from the under side of the table F. In these arms are journaled a shaft B^3, which carries an eccentric-disk B^4, located below two cheek-pieces b', between which also lies the clamping-strip B^2. These cheek-pieces b' are maintained in parallel relation with each other by a clamp member b^2 of proper thickness held in place by a pin b^3, which passes through both cheek-pieces and clamp member. A second clamp member consists of a block b^4, the body of which lies in the space between the eccentric B^4, the clamping-strip B^2, and the cheek-pieces b', and the head of which is slightly larger than the body, (see Fig. 6,) so that it overlaps and rests upon the top edge of the cheek-pieces. On the end of the shaft B^3 is a handle B^5, by which it may be turned, and it will be seen that upon turning the eccentric B^4 from the position shown in Fig. 5 the clamping-strip B^2 is loosened, and if the handle be given a slight turn upward into the position shown in Fig. 5 the clamping-strip will be gripped between the two clamping members b^2 and b^4, so that the table F will be held in place. We prefer to provide a lug b^5 upon one of the brackets F′, against which a pin b^6, projecting from the shaft B^3, will strike and act as a stop to limit the movement of the shaft B^3. The use of such a stop is very desirable, so that in clamping the table F the handle B^5 shall be turned upward and not downward. If the clamping movement of the handle were downward, there would be a tendency in clamping the table to force it downward, and so change its position from that in which the springs f^5 naturally hold it. Thus the adjustment of the table may be made with one hand.

H is a roll mounted eccentrically in bearings h, supported on the table F, and it has a handle H′, by means of which it can be turned so as to assist in clamping the leather to the table. A roll J, preferably covered with leather, is mounted at each end in floating spring-controlled bearings j, carried in ways j' on the frame A and located just in rear of the knife-blade G. It serves also to hold the leather in place on the table F, j^2 being the spring which controls one of the bearings j and j^3 an adjusting-screw by which its strength is adjusted.

It will be seen that a sheet of leather, such as K, may be placed upon the table F and clamped thereon by means of the eccentric clamp H, being held thereon also by the rolls d^7 and J. The advancing end of the table may then be adjusted according to the angle at which the leather is to be cut.

The cutting operation is accomplished by the knife G, which, as suggested above, is mounted to slide longitudinally—that is, crosswise of the machine. For this purpose it is supported in suitable bearings on the frame A, on which bearings it is held on each side by a block A′, which lies under an overhanging arm A^2, being held by set-screws A^3. The knife-blade itself is bolted to a piece G′, to which is pivotally attached a lever G^2, fulcrumed on the arm G^3, projecting from the side of the frame, the lower end of this lever G^2 being connected by a connecting-rod G^4 with an eccentric-strap G^5, mounted on the main shaft C, the rotation of the shaft thus giving the necessary reciprocating movement to the knife. Other means may be used for this purpose if thought best. In order that the machine may be readily started and stopped, we prefer to provide a clutch mechanism on the shaft C, which may be of any suitable form, the form shown being one of well-known construction and hence not described. One element of it is attached to the driving-pulley C′, which normally turns independently of the shaft C, while the other element is connected with the slotted collar c, which rotates with the shaft C and also slides thereon toward and from the element on the pulley to effect engagement therewith and get motion therefrom when desired. For this purpose a forked piece c' is mounted on the end of an arm c^2, projecting from a collar on the slide-rod c^3. Movement is given to this slide-rod c^3 by means of a bell-crank lever c^4, pivoted at c^5 to the frame A. Depressing the lever c^4 throws the clutch into connection with the power-pulley and causes the reciprocation of the knife-blade.

It being desirable for uniformity of work that the rearward position of the bed B and table F should be determined, (for it is in-

tended that the adjustment of the leather shall be such with relation to the knife-edge that the knife-edge shall immediately enter the leather upon the beginning of the forward movement of the bed B and table F,) we prefer to provide an adjustable stop K′, which being set may serve as the starting-point for the forward movement of the bed and the leather which it carries. For this purpose a slotted housing K^2 is mounted on the table A, *k* being the slot therein. In this groove slides the head of a screw *k′*, on which is a block k^2, preferably square in shape, the whole being held in place by a thumb-nut k^3. We also prefer to provide the housing with a scale (indicated at k^4) in order to duplicate any adjustment of the bed and also as a ready means of determining what the length of cut surface of the leather may be.

To put our machine in operation, we first determine the length of the bevel which we desire the knife to cut, this being, for example, say, three inches. We thereupon move the bed B rearward until the front edge of the knife-blade G is approximately three inches from the rear corner f^8 of the table F. We then set the stop K′ against the rear edge of the bed B when it bears tnis proper relation to the knife-blade G. As intimated above, this necessity for calculation may be avoided by having a suitable scale provided whereby the stop may be located at will to produce a given result. When located, all subsequent cuts of leather will be uniform until the location of the stop is changed.

The next operation is to place the leather upon the table F. For this purpose the eccentric roll H being turned, the leather is pushed under it and under the various rolls and under the knife into such position that the position of the leather where the cut is to end will rest upon the rear edge of the table F. The eccentric roll H is turned so as to clamp the leather against the table F. The table up to this point has been clamped in its lower position in order that the leather may be put onto the table. It is now loosened in order that it may be lifted by the spring f^5 against the rolls and knife and is again locked in position by turning the handle B^5, so that the leather is firmly held against the bearing-rolls.

The clutch now being thrown so as to cause the rotation of the main shaft C and the consequent rotation of the eccentric and the reciprocation of the knife-blade G, the crank-handle B^4 is turned by hand so as to cause the pinion *b′* to engage with the rack *b* and move the bed and table forward—that is, in the direction of the screw, (see Fig. 4)—this action also serving to give a positive rotation to the roll d^7, which in view of its proximity to the edge of the knife-blade G will cause the leather to be properly fed thereto so as to be cut thereby. It will be noted that as the knife-blade is substantially horizontal it will give a horizontal cut to the leather, the length of bevel being determined by the angle at which the leather is presented to the knife-blade—that is, the angle of the table—and as the rear point of the table F is liable to be struck by the knife-blade G as it makes the final cut through the leather we prefer to relay it or otherwise provide it with a hardened surface—say of steel or aluminium—suitably attached to it, so that the level of the table will not only not be injured by its constant contact with the knife-blade in finally detaching the leather, but will act to whet the knife-blade when it comes in contact therewith. The hinged end of the table F is also rounded slightly, so that the knife may slide past, irrespective of the angle the table is set at. It will be seen that by this means the length of cut and the angle of the cut to the surface of the leather may be accurately determined and the cut itself be made clean, because it is caused by a reciprocating or drawing movement of the knife rather than by causing the leather to come into engagement with the edge of the knife.

In order that the location of the knife itself may adjusted to compensate for wear, we prefer that its bearings shall have a forward-and-rearward adjusting movement given to it by means of screws L, provided with suitable handles *l* and passing through threaded openings in blocks on the frame A. (Not shown.) Such a movement compensates for wear upon the knife and also enables a proper adjustment when a new blade is inserted. This adjustment is not more carefully described because of its simplicity and its similarity to well-known constructions in other machines.

A feature of value in the machine is the rounding off of the hinged end of the table F, whereby the table may be set at any reasonable angle to the knife-blade and the knife make a clean finish to its cut. This is very important in a machine of this kind and, so far as we are aware, has never been successfully practiced in machines known to the trade.

Another point of importance in our machine consists in the fact that when the table is free, so that it lifts the leather against the knife, the spring by which the table is lifted will always present the leather to the knife at a given pressure. The spring having done its work in lifting the table, the table is clamped by a clamp which retains the leather against the opposing rolls and the knife-edge without changing the pressure with which it bears on the knife. It will also be seen that not only may the length of the scarf-joint be adjusted by adjusting the stop against which the bed is pushed back before the cutting operation begins, but also that a further vertical adjustment (which may be desirable in

view of the wear upon the table) may be given to the highest point of the table, so as to insure the working of the machine to the best advantage.

We have described this machine as a hand-machine; but it may of course be operated by power applied in a suitable way to the shaft *d'*.

What we claim as our invention is—

1. In a scarfing-machine, in combination, a movable table adapted to serve as a work-support, a knife-blade located above said table, and a roll also located above said table and adapted to feed leather to the edge of said knife-blade, said roll being located in front of said knife-blade and in close proximity thereto, and said movable table being provided with means connecting it with said roll whereby the surface speed of said roll will be the same as the speed of said table, as described.

2. In a scarfing-machine, in combination, a movable table adapted to serve as a work-support, a knife-blade located above said table, and a roll also located above said table and adapted to feed leather to the edge of said knife-blade, and said roll being located in front of said knife-blade and in close proximity thereto, and being positively revolved in a direction to feed the leather to the knife-blade, as described.

3. In a scarfing-machine, in combination, a knife-blade, a flat leather-carrying table, a clamp to clamp the leather to said table, and means located above said table to engage the leather on said table at a surface speed equal to the movement of said table and in a direction to force the leather against said knife-edge, said means comprising a feed-roll and means to positively drive said feed-roll, as described.

4. In a scarfing-machine, a bed, means whereby it is reciprocated, a knife-blade located above said bed, a work-supporting table mounted on said bed and below said knife-blade and hinged at one end, and means whereby the free end of said table may be clamped with relation to said bed, comprising a cam adapted to be rotated so as to clamp said table whereby the work may be presented at a proper angle to the knife-blade, as described.

5. In a scarfing-machine, a bed, means whereby it is reciprocated, a knife-blade located above said bed, a work-supporting table mounted on said bed and below said knife-blade, and hinged at one end, and means whereby the free end of said table may be clamped with relation to said bed, comprising a projection extending from said bed, and a cam mounted on said table and adapted to engage said projection from said bed, whereby the work may be presented to the knife at a proper angle, as described.

6. In a scarfing-machine, a bed, means whereby it is reciprocated, a knife-blade located above said bed, a work-supporting table mounted on said bed and below said knife-blade, and pivoted at one end, said pivoted end of said table being rounded off, whereby the free end of the table may be elevated and depressed and the said end of the table will always present the proper surface to the knife-edge, as described.

7. In a scarfing-machine, in combination with a knife-blade, a table hinged at one end, a leather-holding roll located in rear of said knife-blade and above said table, and means whereby said table is pressed upward against said roll and said knife-blade with a substantially constant pressure, as described.

8. In a scarfing-machine, in combination with a cutting mechanism, a bed, a table pivotally mounted thereon near one edge thereof, and means for retaining the free edge of said table in a fixed position with relation to said bed, said means comprising a clamping-piece pivotally mounted to said bed, a clamp pivotally mounted on said table, and means for causing the engagement of said clamp and said clamping-piece, as described.

9. In a scarfing-machine, in combination with a knife-blade, a table, means for feeding said table with relation to said knife-blade, whereby said knife-blade will engage material placed thereon to cut it, the rear edge of said table being provided with a face-piece whereby the knife-blade may be whetted by contact therewith, as and for the purposes described.

MERTON A. HOLMES.
GEORGE W. ALLEN.

Witnesses:
GEORGE O. G. COALE,
M. E. FLAHERTY.