(No Model.) 2 Sheets—Sheet 1.

W. GADD.

APPARATUS FOR CUTTING WEFT PILE FABRICS.

No. 438,538. Patented Oct. 14, 1890.

FIG. 2.

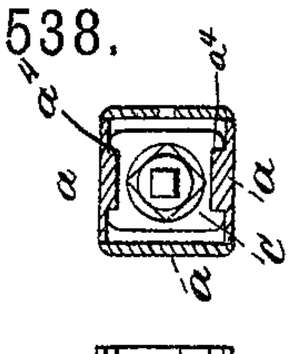


FIG. 1.

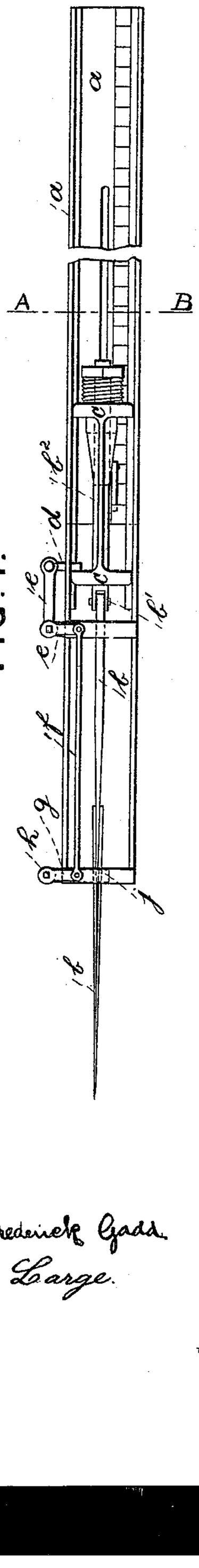


FIG. 3.

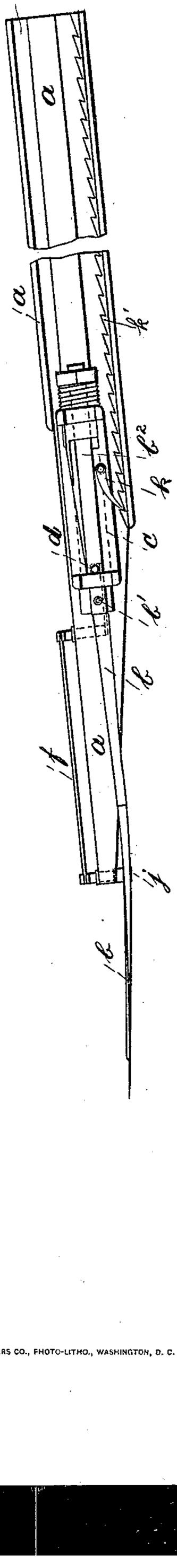
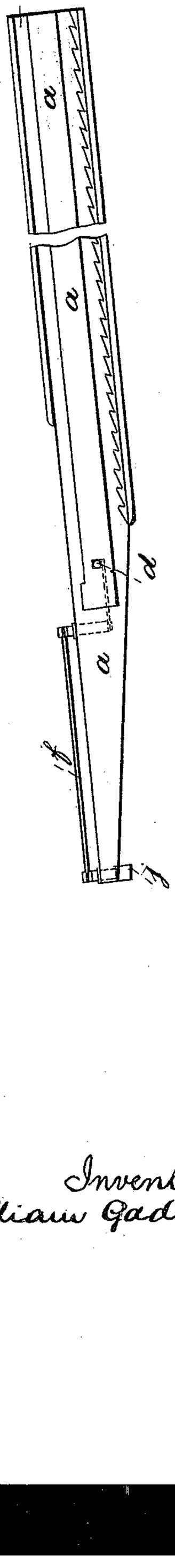


FIG. 4.



Witnesses:
George Frederick Gadd.
Charles Large.

Inventor:
William Gadd

(No Model.) 2 Sheets—Sheet 2.

W. GADD.

APPARATUS FOR CUTTING WEFT PILE FABRICS.

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FIG. 5.

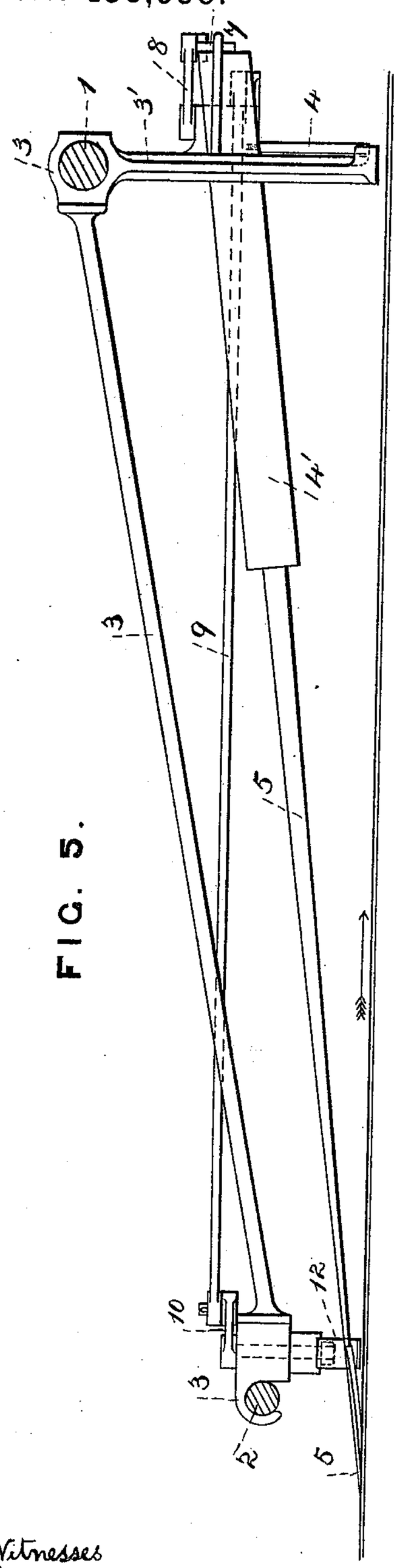
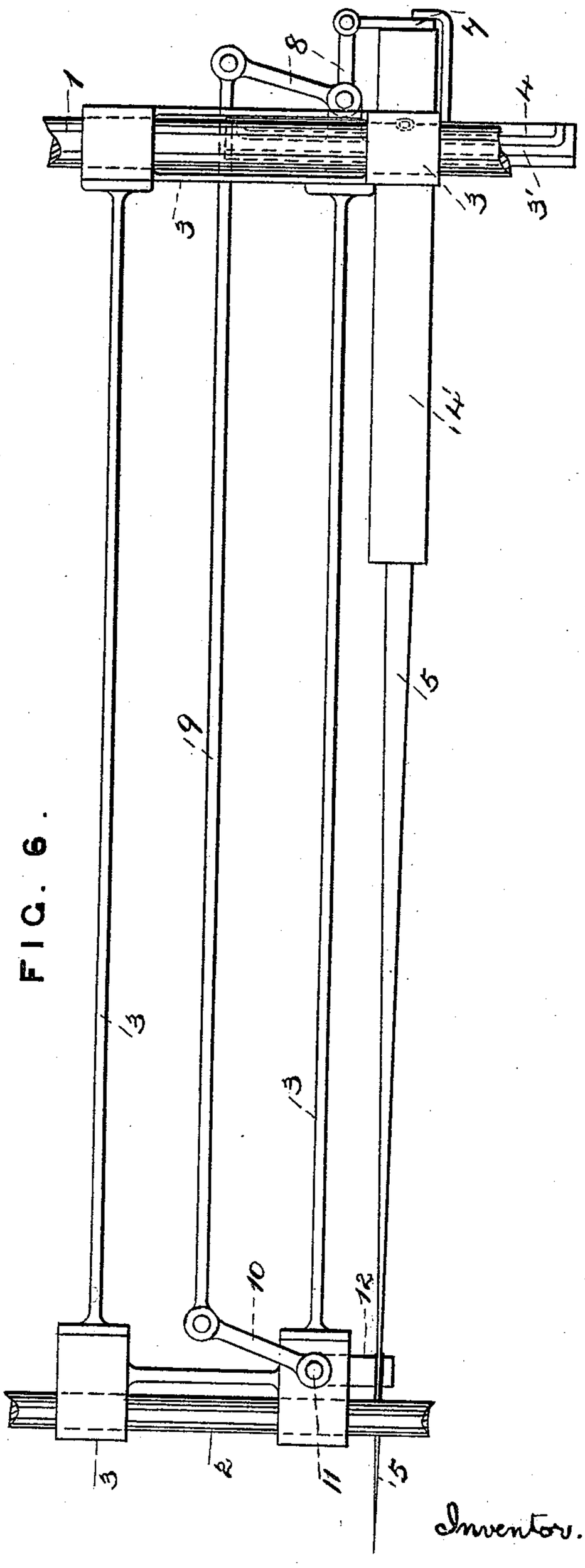


FIG. 6.



Witnesses
George Frederick Gadd
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UNITED STATES PATENT OFFICE.

WILLIAM GADD, OF MANCHESTER, ENGLAND.

APPARATUS FOR CUTTING WEFT PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 438,538, dated October 14, 1890.

Application filed January 31, 1890. Serial No. 338,714. (No model.) Patented in England March 30, 1889, No. 5,455.

To all whom it may concern:

Be it known that I, WILLIAM GADD, a subject of the Queen of Great Britain, residing at the city of Manchester, England, have invented new and useful Improvements in Apparatus for Cutting Weft Pile Fabrics, (for which I have obtained a patent in Great Britain, No. 5,455, bearing date March 30, 1889,) of which the following is a specification.

The improvements relate to the cutting of weft pile fabrics in machines or frames wherein the fabric to be cut travels toward a stationary knife either continuously or intermittently, and have for their object the automatic holding in position, totally or partially, of a knive of the ordinary fustian-cutting kind, or a modification thereof, in such manner that when the point of the knife cuts into the cloth from any cause a quick releasement of such knife from the holder takes place, and the same is allowed to freely travel with the moving fabric until such time as the machine may be stopped either by automatic means or by the control of the operator. To accomplish this and to effect my improvements, I provide what I term a "feeler," in the form of the leg of a lever capable of turning in or about the same plane as the knife is fixed or approximately the cloth travels. The end of this lever, which is preferably thin and flat, passes underneath the knife and in front of the advancing line of cut pile, so that in case of the knife not clearing itself (either by cutting into the cloth or by any improper obstruction therein presenting itself) this feeler-lever is drawn forward, and by turning on its axis is pressed from underneath the knife to one side. Another (or it might be the same) leg of this lever has a link-connection by pin-joint with the releasing mechanism of the knife or its carrier portion, by which means the knife is released from the holding apparatus whenever the feeler-lever is pulled or drawn forward, which takes place whenever the cutting-knife enters the back of the fabric instead of simply cutting clear the weft pile. When the knife is released at the handle or carrrier or back end, it is free to travel with and on or in the cloth until such travel is stopped either by automatic means or by the attendant, or until the cloth is otherwise dealt with. The releasing mechanism can be varied in detail, and may be placed above or on one side of the knife handle or carrier; but that the improvements may be better understood, I will, by the aid of the accompanying drawings, proceed more fully to describe means employed by me.

In the drawings, Figure 1 shows a plan view of a hand-held knife-holder, with knife in position arranged in accordance with my invention, but with the top of the holder removed to more clearly show the internal arrangement, although such holder might be constructed in skeleton form, if desired. Fig. 2 shows a transverse section of the same through the line A B of Fig. 1, with top restored. Fig. 3 shows a side elevation of the same arrangement, but with the side removed. Fig. 4 shows an elevation of the hand-holder with the side removed and minus the knife and its sliding carrier. Fig. 5 shows a side elevation of a holder held automatically with the knife in position, and Fig. 6 is a plan view of the same.

In the case of a knife designed to be held by hand and in accordance with this invention, as shown by Figs. 1 to 4, *a a* is the knife holder or frame, which in this example is constructed hollow, with a slot or slit in the bottom, so as to allow of the free travel of the knife when released, and in which slot the knife does travel on releasement.

b b is the knife, which is hinged at *b'* to the bar b^2, for the purpose of enabling the knife-point to adjust itself to the requisite angles in its travel after release from the cutting position on penetrating the cloth.

c c is the knife-carrier, which is capable of sliding along and within the knife-handle *a a*, and b^2 b^2 is a bar in continuation of the knife which is capable of being set backward or forward in the knife-carrier to a limited extent, and held in position therein by the screw and wedge, as shown, or by other means, to enable the requisite adjustment of length to be made.

The knife-carrier *c* is held in the cutting position by means of the small pin or bolt or other stop *d*, attached to one leg of the bell-crank lever *e e*, the other leg of which is con-

nected by means of the link *f* with the lever *g* on the pin or small shaft *h*, the lower end of which is fitted with the thin plate "feeler-lever" *j*. This feeler passes underneath the knife between the knife and the cloth, and thus, in case the knife enters the fabric undergoing operation, such feeler-lever is compelled to be pushed aside a certain distance to enable the fabric to come forward. This thrusting of the feeler-lever on one side withdraws the small pin or bolt or stop *d d* at the end of the lever *e e*, and so sets the knife-carrier free to travel with the fabric in its forward motion. The pawl *k*, pivoted to the knife-carrier, takes into the ratchet-bar, formed in or attached to the holder, for the purpose of convenient withdrawal of the knife from the cloth at any position it may have arrived at; but this ratchet and pawl may be dispensed with when not required. The knife-handle may have the slit or slot carried right through to the end, if required. The projections a^4 (shown on the sides of the knife-handle inside the same) serve as guides, on which the knife-carrier *c c* may travel after releasement.

Figs. 5 and 6 illustrate the invention as applied to a fixed knife frame or holder, from which the knife is released on penetrating the cloth in manner similar to the hand-held knife-holder. In these figures, 1 is a rod passing from one side of a cutting-machine to the other, and 2 is a second rod, both of which are affixed to suitable brackets attached to the framing or otherwise. 3 is the knife-holder, in this example formed in skeleton construction, and which is capable of sliding laterally on the rods or bearers 1 and 2, so as to enable the knife to be presented to any "race" across the piece of fabric under operation. 4 is the knife-rest, and with the carrier 4′ and the knife 5 form a cutting-knife very similar to an ordinary cutting-knife for fustian goods. In this example the knife-bar does not need to be broken or hinged.

The rest 4 is during operation supported by the pendent arms of the holder at 3′ 3′. The knife-holder is arranged with the stop 7, the bell-crank lever 8, the connecting-link 9, the lever 10 on the pin 11, with the feeler-lever 12 attached to the lower end of such pin, substantially as in the first form of the invention herein shown and described. When the knife is released by the withdrawal of the pin or stop 7, the knife 5, with its carrier or handle 4′ and rest 4, will be carried forward by the point of the knife being in the cloth, and will travel thereon until the machine is stopped or the knife withdrawn by the attendant or otherwise.

It will be seen that in no case with this invention is there any automatic withdrawal of or attempt to release the point of the knife from the cloth upon its piercing the same, the operation under this invention being simply to release the holding in position of the knife, thus allowing it to travel with and at the speed of the cloth until released later by the attendant or by other means either by stopping the machine or not. The arrows indicate the direction of travel of the cloth.

I am aware that various automatic knives for the purpose of cutting weft pile fabrics have been invented prior to this which have other releasing mechanisms, and which have means provided therein for the rapid withdrawal of the point of the knife from the cloth on its piercing the same, allowing the pierced place in the cloth to leave the knife behind it; also, a releasing mechanism has been combined with a swivel or turn-over knife, which latter clears itself from the cloth by the act of turning over; but these form no part of and are quite different from this my present invention, which consists of a special form of releasing apparatus depending on a feeler placed underneath the knife between such knife and the traveling cloth, which feeler has a lateral motion given thereto, and also in combining such or other feeler-releasing apparatus with a knife, which when released travels with or on the cloth until the point is withdrawn therefrom by other means or by the attendant, whether stopping the machine or not for the purpose.

Variations in detail may be made—such as the form or design of the various parts, together with their arrangement—and the apparatus may be constructed to carry or to be worked with more than one knife at a time without departing from the peculiar character of the invention.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim, and desire to secure by Letters Patent, is—

1. In combination, the knife holder or rest, a sliding knife carried thereby, a detent for holding the knife in said holder or rest, and a feeler plate or lever connected with the detent and located beneath the knife to provide for freeing the knife and permitting it to move with the cloth, substantially as and for the purposes set forth.

2. In combination, the knife holder or rest, a knife supported thereby, a detent for holding the knife from longitudinal movement, and a feeler located in proximity to the point of the knife and connected with the detent for moving the latter and freeing the knife for permitting it to move with the cloth, substantially as and for the purposes set forth.

WILLIAM GADD.

Witnesses:
GEORGE FREDERICK GADD,
ARTHUR GADD.