

No. 616,570.

Patented Dec. 27, 1898.

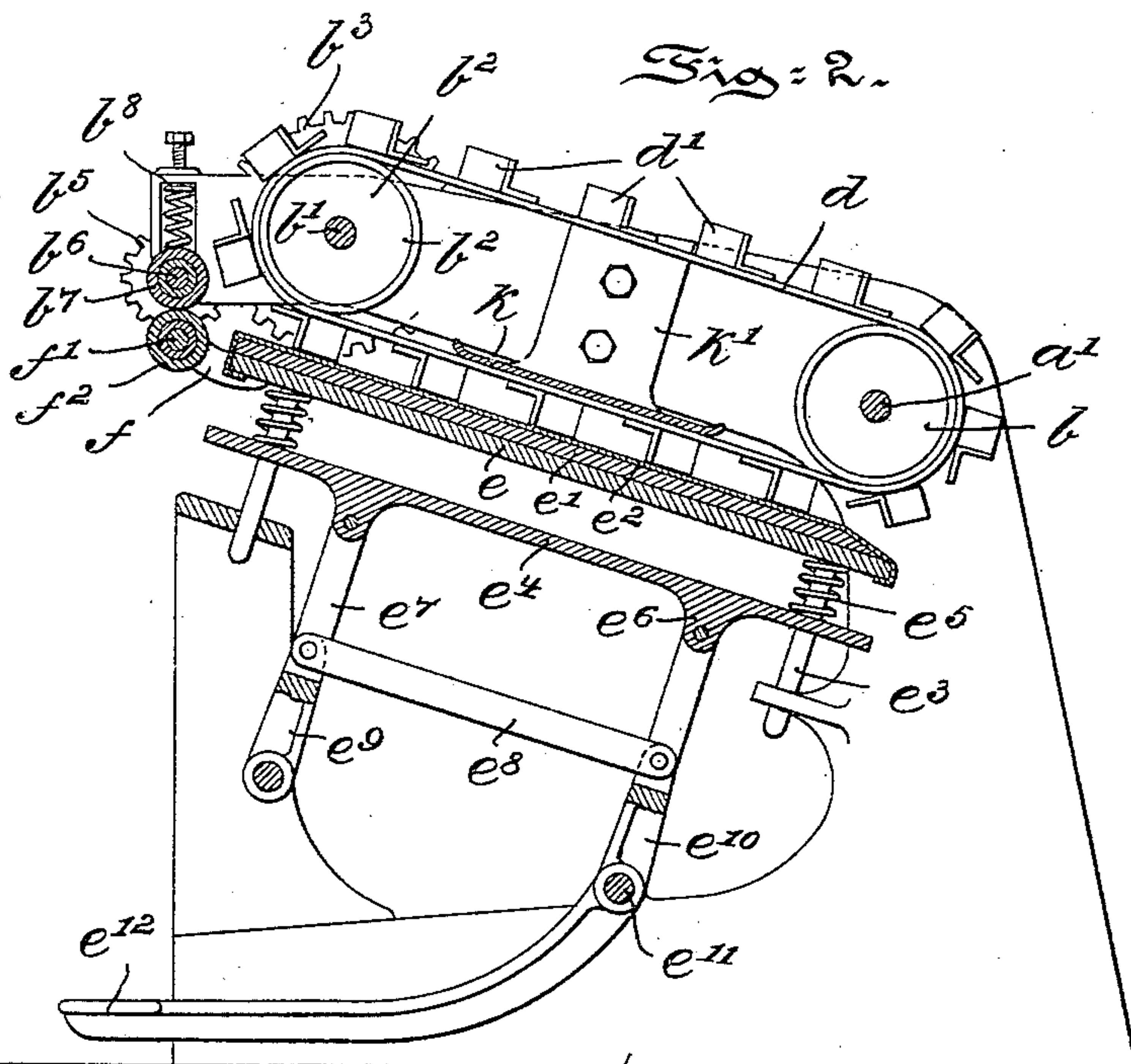
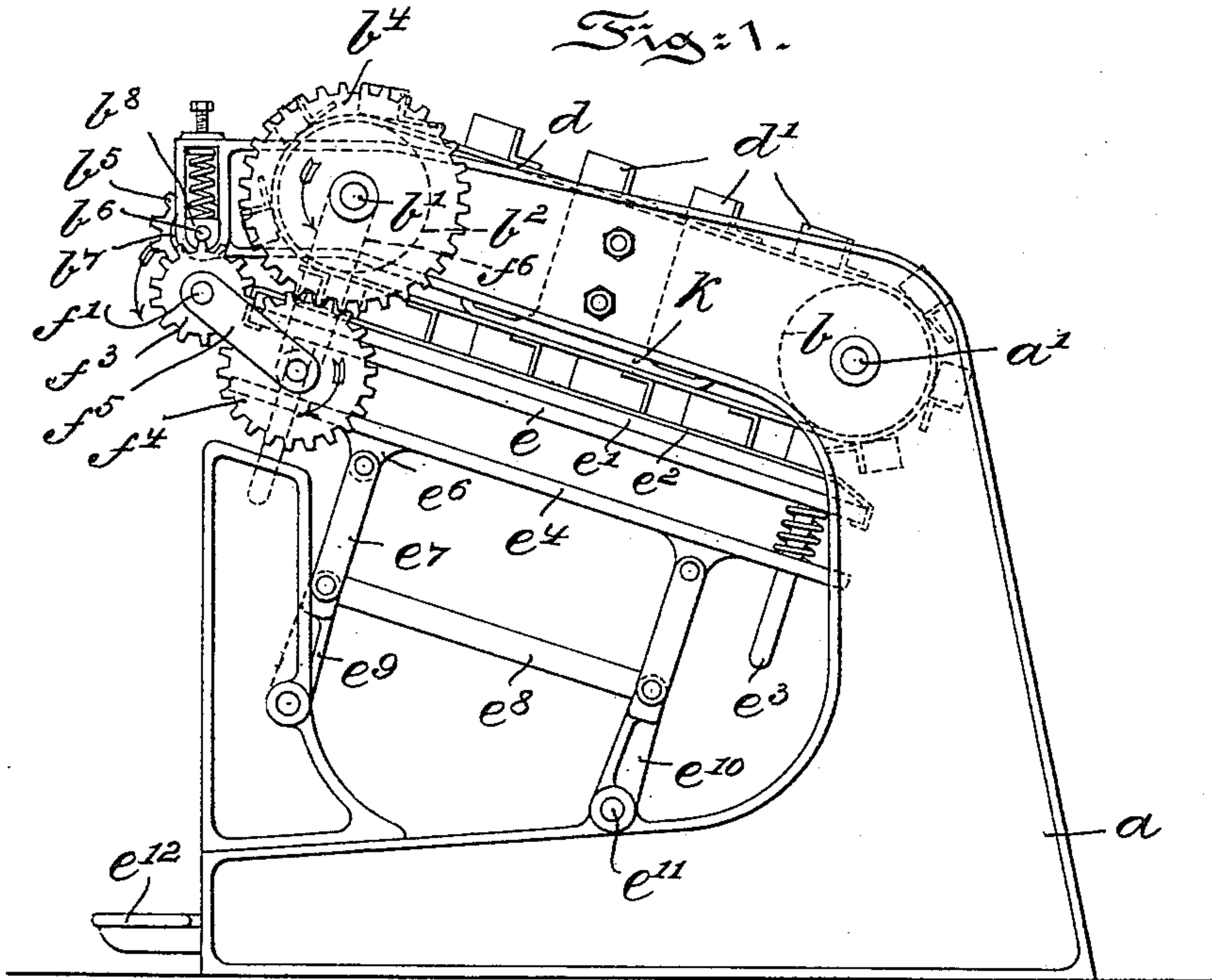
J. HALL.

MACHINE FOR TREATING HIDES, SKINS, OR LEATHER.

(Application filed Aug. 11, 1898.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:
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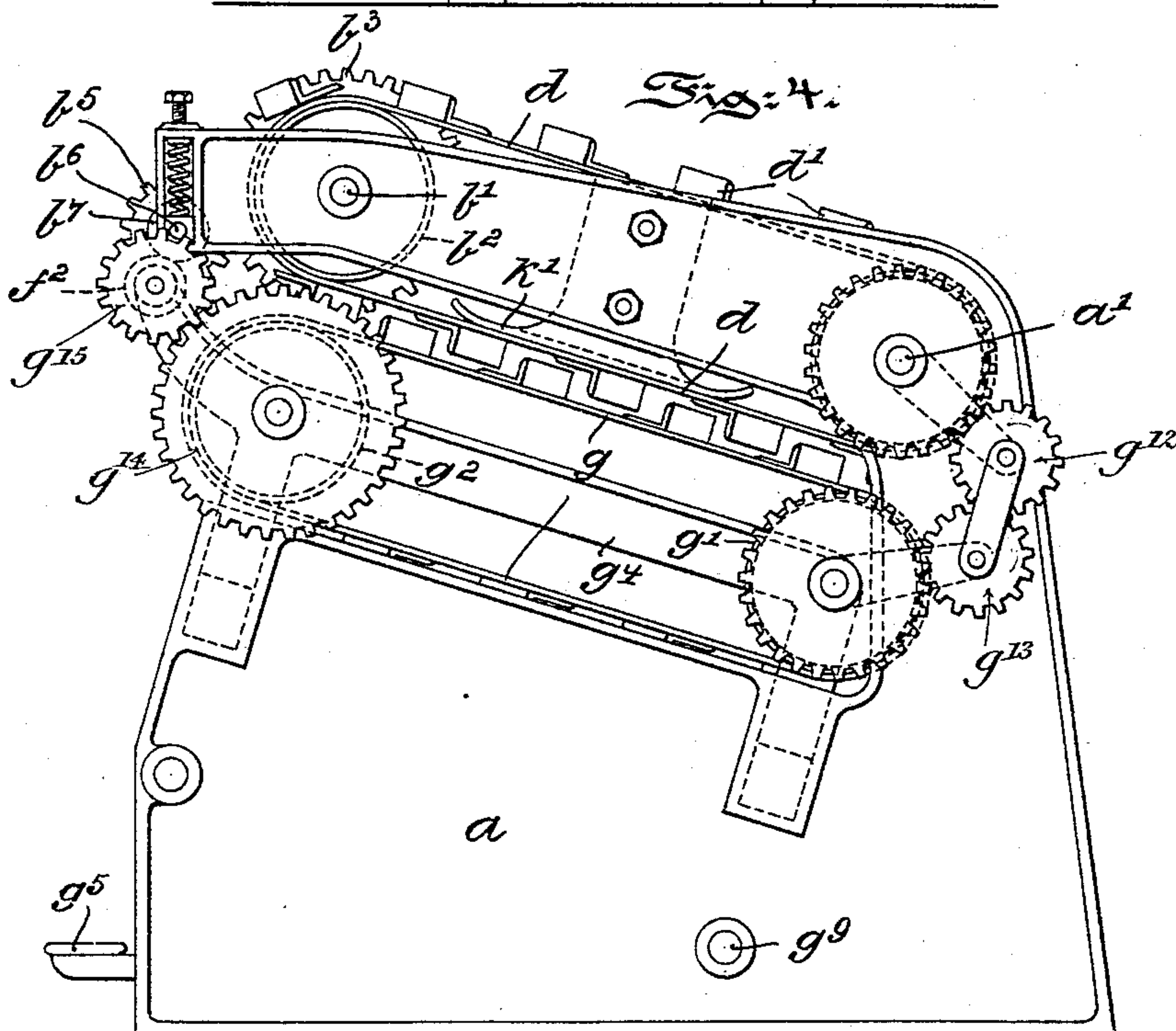
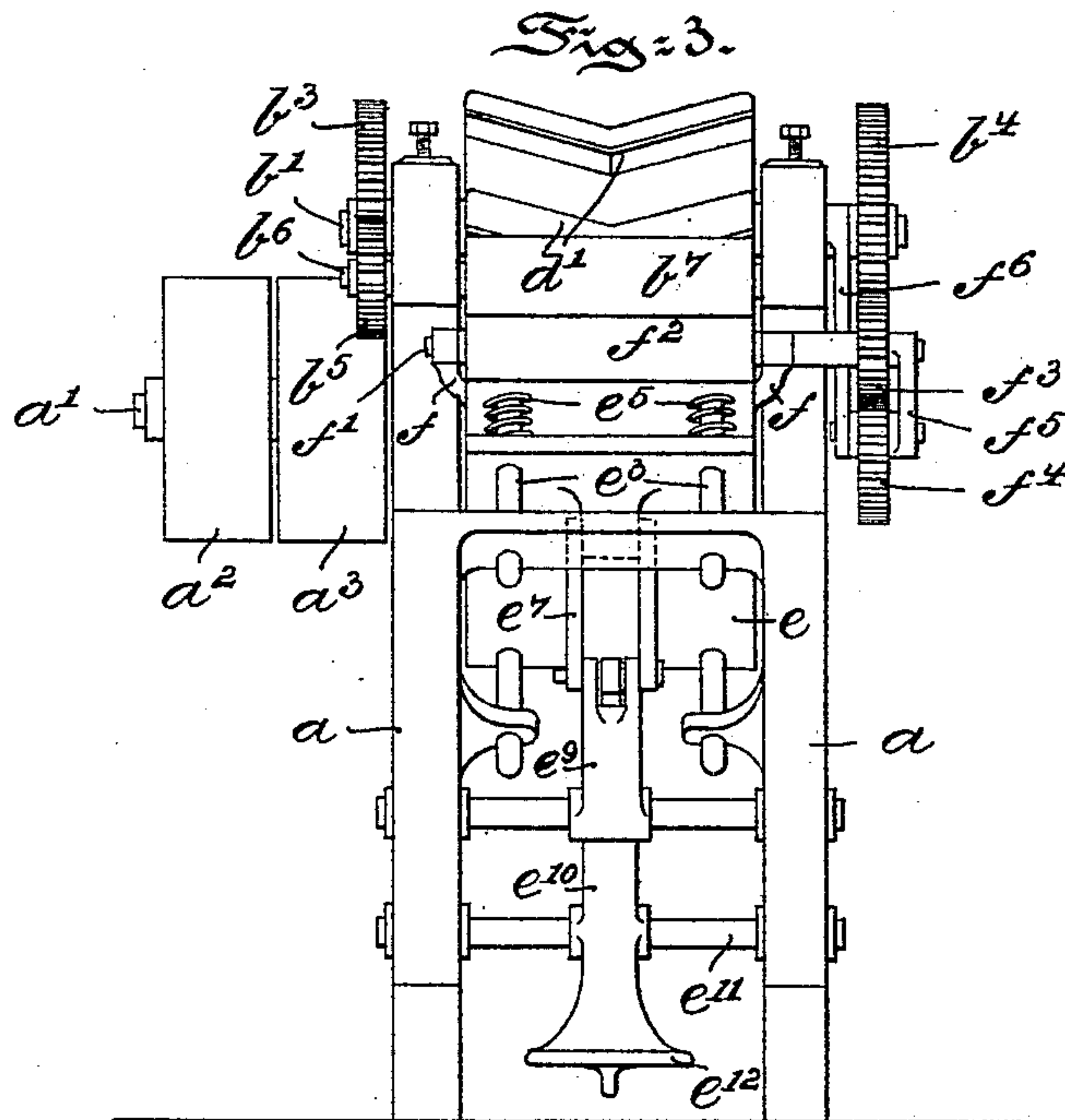
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4 Sheets—Sheet 2.



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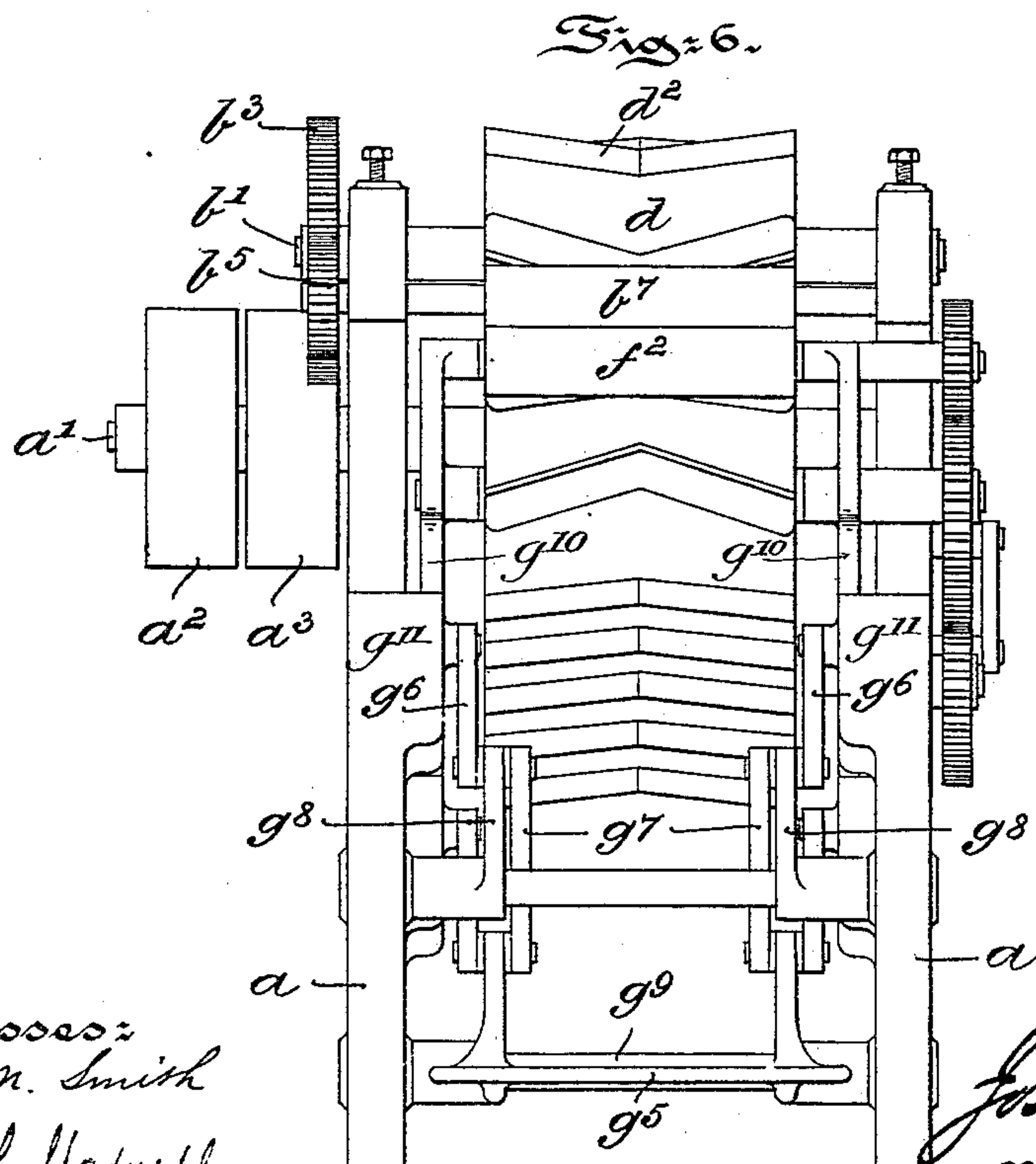
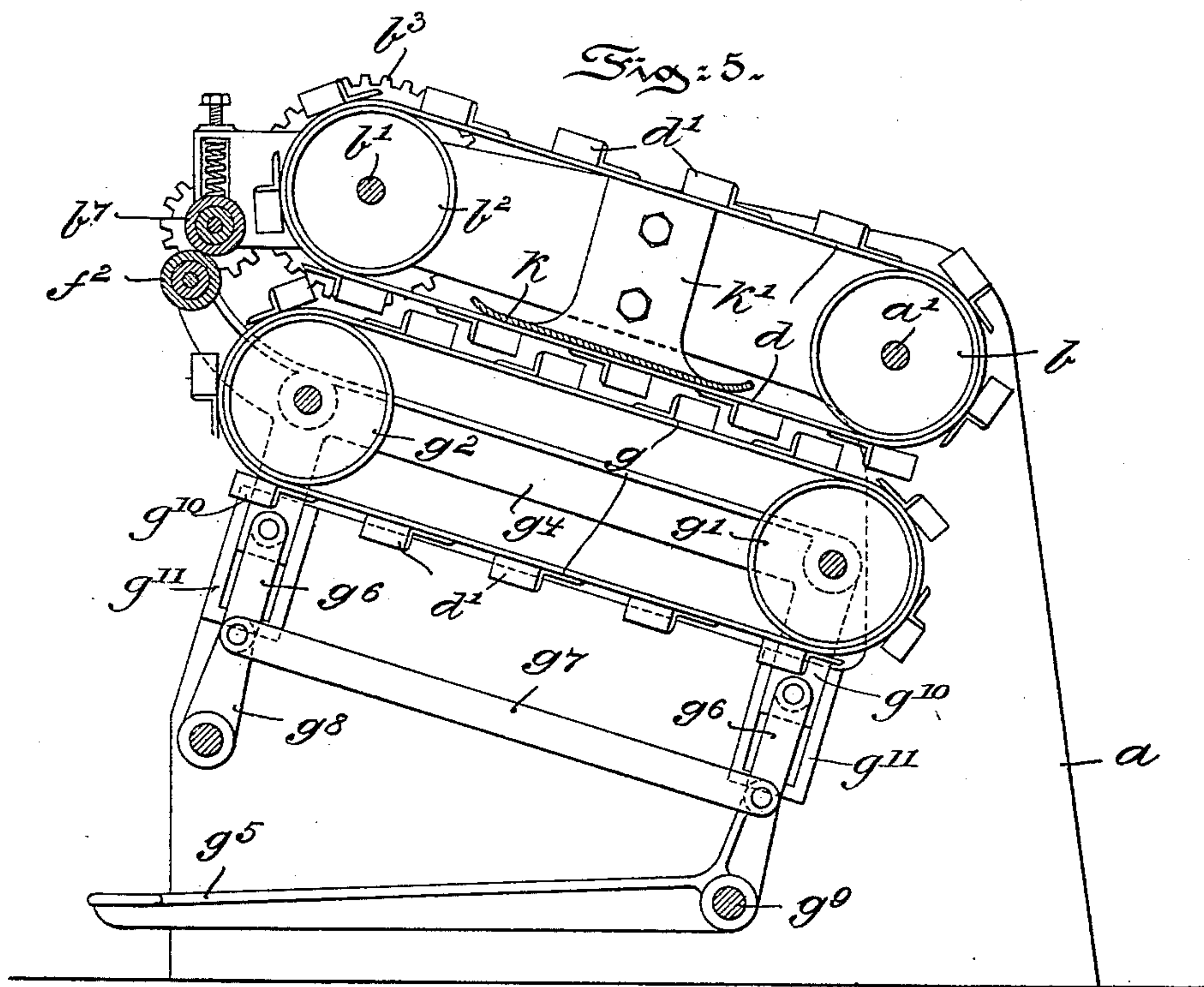
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(No Model.)

4 Sheets—Sheet 3.



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(Application filed Aug. 11, 1898.)

(No Model.)

4 Sheets—Sheet 4.

Fig. 7.

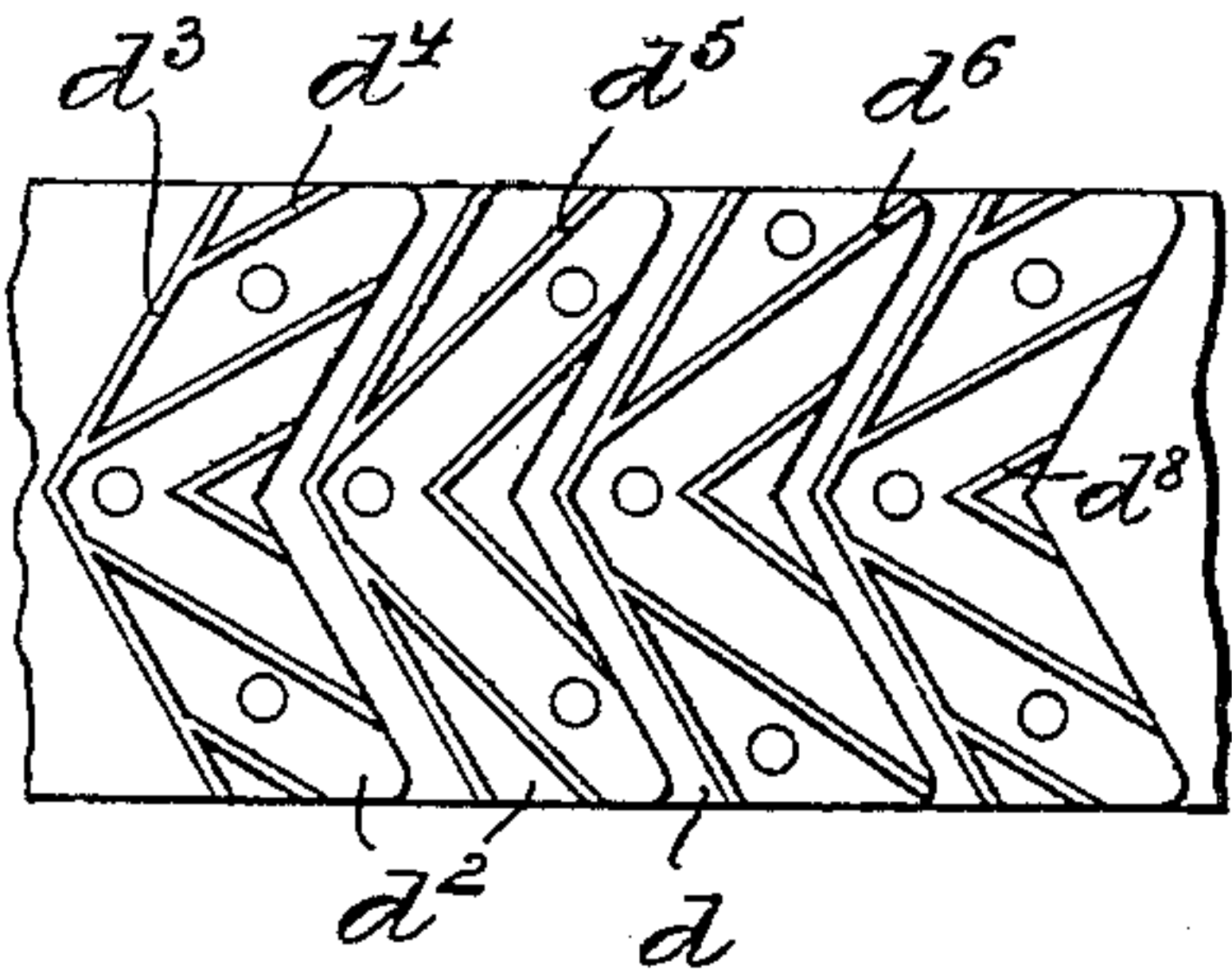


Fig. 8.

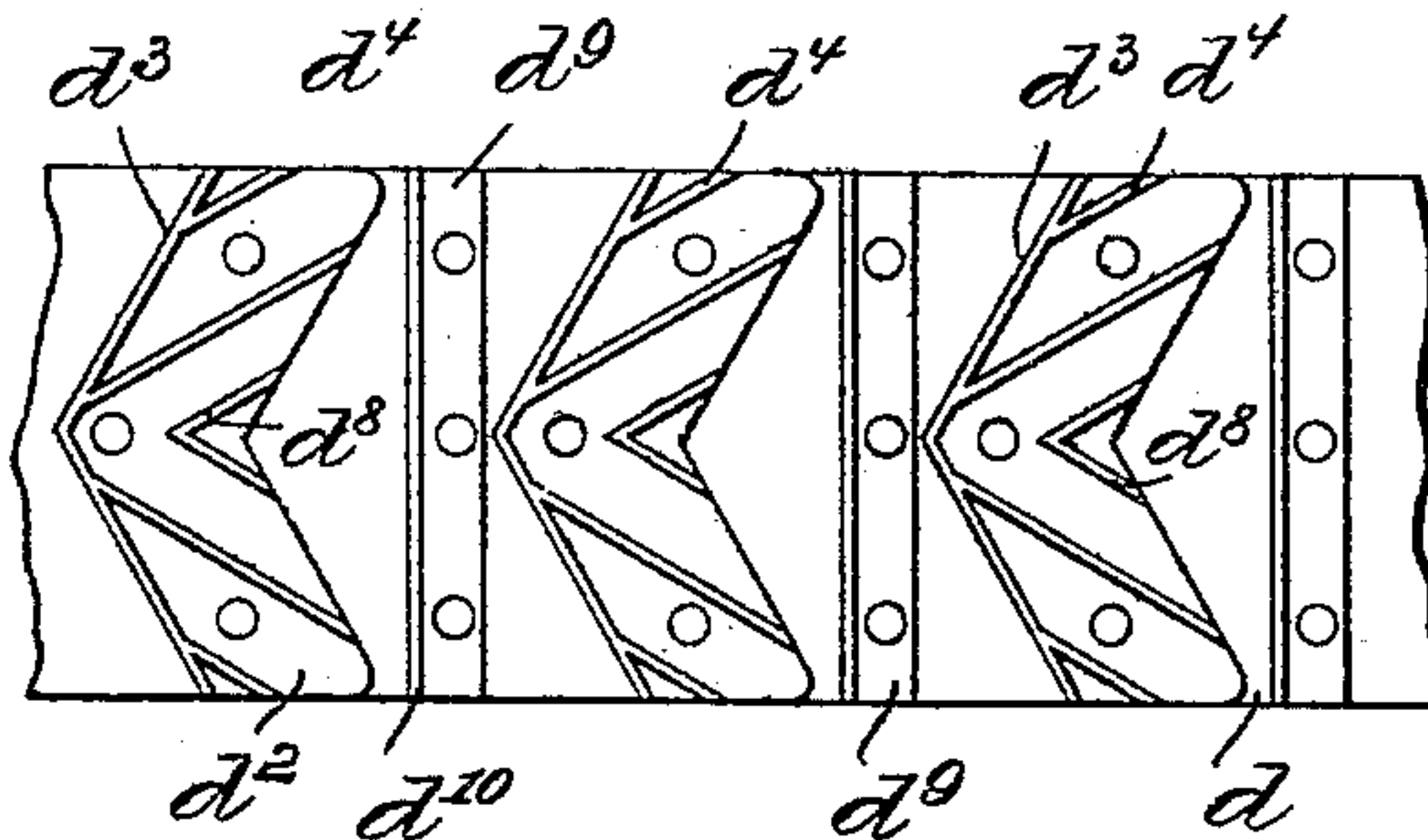


Fig. 9.

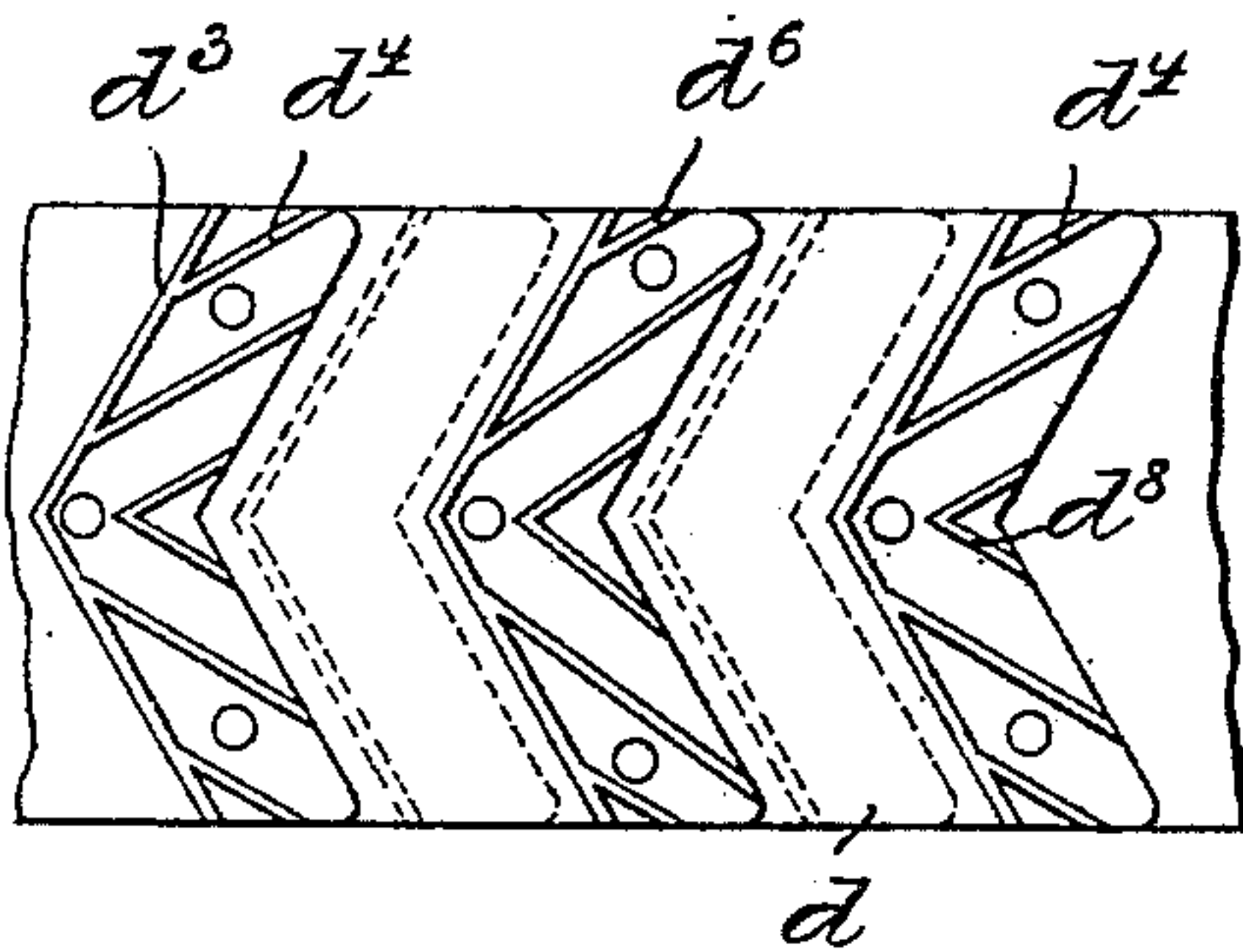


Fig. 10.

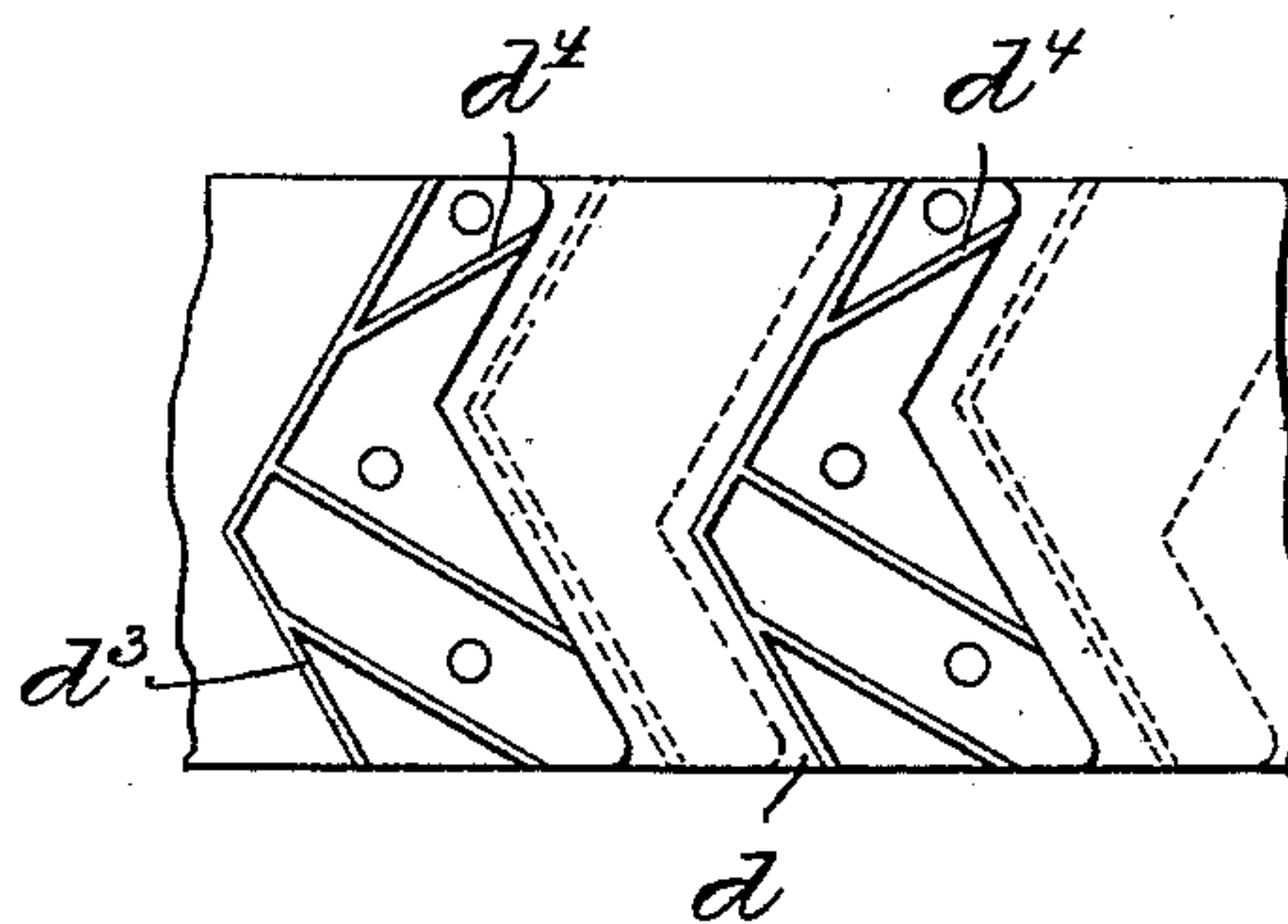
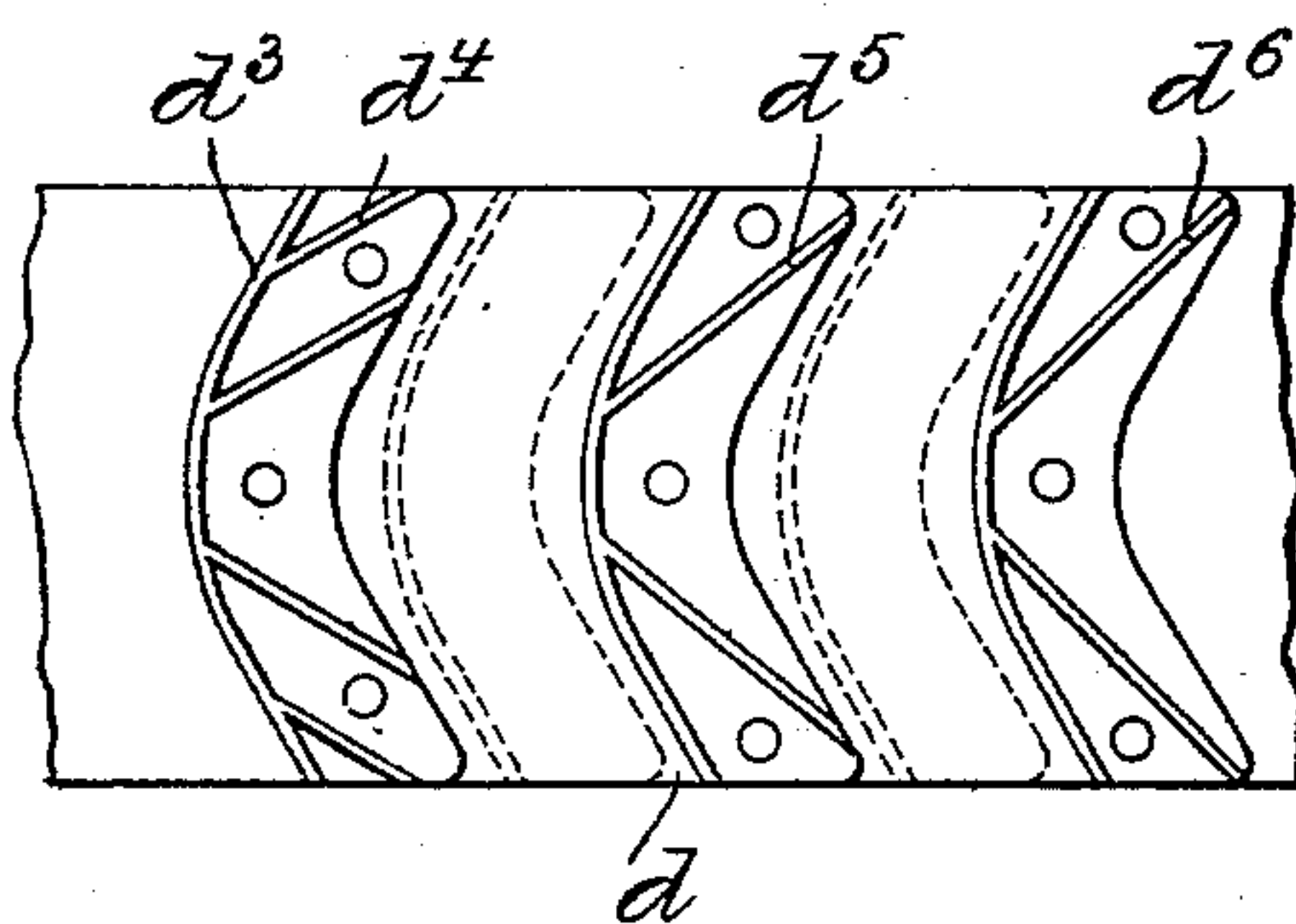


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOSEPH HALL, OF LEEDS, ENGLAND.

MACHINE FOR TREATING HIDES, SKINS, OR LEATHER.

SPECIFICATION forming part of Letters Patent No. 616,570, dated December 27, 1898.

Application filed August 11, 1898. Serial No. 688,359. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HALL, a subject of the Queen of Great Britain, residing at Leeds, in the county of York, England, have invented certain new and useful Improvements in Machines for Treating Hides, Skins, or Leather, of which the following is a specification.

My invention has relation to a machine for treating hides, skins, or leather, and is particularly adapted for performing that operation or manipulation technically known as "softening," and in such connection the invention relates particularly to the construction and arrangement of such a machine.

The principal object of my invention is to provide a machine for softening hides, skins, or leather and having a series of working blades or knives supported on and carried by a traveling flexible endless carrier in conjunction with a support upon which the work is laid, said support being flexible and either fixed or traveling, and with two feed-rollers adapted to feed or drag the work away from the working blades or knives.

My invention, stated in general terms, consists of a machine of the character described when constructed and arranged in substantially the manner hereinafter explained and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part thereof, in which—

Figure 1 is a side elevational view of a machine embodying main features of my invention. Fig. 2 is a longitudinal sectional view of the machine. Fig. 3 is a front elevational view. Fig. 4 is a side elevational view of a modified form of the machine. Fig. 5 is a longitudinal sectional view of the machine illustrated in Fig. 4. Fig. 6 is a front elevational view of Fig. 4, and Figs. 7 to 11 are top or plan views of various forms of working blades or knives mounted upon carriers and adapted for use in the machine of my said invention.

Referring to the drawings, *a* represents the framework of the machine, in which is supported the power-shaft *a'*, on which are located the fast and loose pulleys *a²* and *a³*. Keyed

to the shaft *a'* is a roll *b*, extending across the machine, over which passes an endless belt or carrier *d*, on the outer surface of which are mounted the working blades or knives *d'*, as hereinafter more particularly described. At the front end of the machine and supported by the framework *a* is a second shaft *b'*, to which is keyed or otherwise secured a second roll *b²*, also extending across the machine and forming with the first roll *b* a support for the belt or carrier *d* and a means for causing the same to travel. On one end of the shaft *b'* is secured a spur or gear-wheel *b³*, and on the opposite end a similar spur or gear wheel *b⁴* is secured. The gear-wheel *b³* meshes with a pinion *b⁵*, fixed to a shaft *b⁶*, supported in the framework *a* of the machine. The shaft *b⁶* carries a feed-roller *b⁷*, the periphery of which is covered with india-rubber or similar material. The shaft *b⁶* is supported in an adjustable spring-bearing *b⁸* in the framework of the machine. By reason of the connection of the shaft *b⁶* through the pinion *b⁵* and gear-wheel *b³* with the shaft *b'* the feed-roller *b⁷* is caused to rotate in a direction opposite to the rotation of the roll *b²* and of the endless carrier *d*.

Referring now to Figs. 1, 2, and 3, the hide, skin, or leather to be operated upon is preferably supported upon a table *e*, the upper face of which is provided with a bed *e'* of india-rubber or similar material covered with a layer *e²* of leather or similar material. The table *e* is provided on its under face with four pins or guide-arms *e³*, passing freely through a plate *e⁴*. Around these arms *e³*, between the plate *e⁴* and the table *e*, are coiled the springs *e⁵*, the function of which is to normally elevate the table *e* above the plate *e⁴* and to form a spring-cushion or elastic support between the table and plate. The plate *e⁴* is provided with suitable lugs *e⁶*, to each of which is pivotally connected one end of a link *e⁷*. The lower ends of the links *e⁷* are pivotally connected to the cross-link *e⁸*, which cross-link *e⁸* is also pivotally connected to the free end of each of two lever-arms *e⁹* and *e¹⁰*. The lever-arm *e⁹* is pivoted to the frame *a* of the machine, whereas the lower end of the lever *e¹⁰* is secured to a rock-shaft *e¹¹*, mounted in the framework *a* of the machine. The rock-shaft *e¹¹* is operated by a treadle *e¹²* in such a

manner that when the treadle e^{12} is depressed the shaft e^{11} is rocked in one direction to thereby elevate through the links e^7 and cross-link e^8 the plate e^4 and compress the springs e^5 . The compression of the springs e^5 serves to elevate the table e and to bring it into operative position with respect to the traveling carrier d , and also serves to depress the plate e^4 and permit of the depression of the table e when pressure upon the treadle e^{12} is removed.

The forward end of the table e is provided with bearings f , in which is supported a shaft f' , carrying a second feed-roller f^2 , similar in construction to the feed-roller b^7 , and adapted to coact therewith in the feeding of the work away from the table. The shaft f' of the feed-roller f^2 is provided with a pinion f^3 , meshing with an idle-wheel f^4 , rotating in a bracket f^5 , secured at one end to a bracket f^6 on the shaft b^2 and swinging at its other end on the shaft f' , and this idle-wheel f^4 gears with the gear-wheel b^4 of the shaft b' . The shaft f' and feed-roller f^2 are thus rotated in a direction opposite to that of the carrier d .

In the modification illustrated in Figs. 4, 5, and 6 the flexible table e is replaced by a second traveling carrier or endless belt g , which passes around two rolls g' and g^2 , to each of which motion is conveyed by suitable gearing connecting the shafts of these pulleys with the shafts of the pulleys around which the upper carrier or belt d passes. It is to be understood that the carriers g and d travel in the same direction and that the shafts of the rolls g' and g^2 have bearings in a frame g^4 , which is connected to a treadle g^5 by means of the links g^6 , cross-links g^7 , lever-arms g^8 , and rock-shaft g^9 in a manner similar to that in which the plate e^4 is connected to its treadle. The frame g^4 has two arms g^{10} at either side of the machine, which are guided in pockets g^{11} in the framework, as illustrated in Figs. 5 and 6. In this form of the machine motion is transferred from shaft a' of roll b to one of the rolls g' by means of swinging gearing g^{12} g^{13} , and on the shaft of the other roll g^2 is secured a gear-wheel g^{14} , meshing with a pinion g^{15} on the shaft of feed-roller f^2 , by means of which the feed-roller f^2 is positively driven, as illustrated in detail in Fig. 4.

The carrier d or g consists, preferably, of a belt of leather or similar flexible material, to which is united a series of blades or knives of varying forms and arrangements, some of the preferred forms and arrangements being illustrated in detail in Figs. 7 to 11. Thus in Figs. 7 and 9 the knives or blades are formed of a series of plates d^2 , from the upper surface of which project the working surfaces or edges of the knives or blades. These working edges comprise the two main blades or wings d^3 , arranged at an angle to each other, from each of which main blades project a series of short blades or vanes d^4 , d^5 , and d^6 . The arrangement of these short blades is as follows: The short blades d^4 are arranged at a cer-

tain angle to each main blade d^3 , and the succeeding short blades d^5 and d^6 are arranged at angles to their respective main blades, which angles differ from each other and from the angle made by the short blades d^4 with its main blades d^3 . Each plate d^2 in Figs. 7, 8, and 9 is also provided, in addition to the main blades d^3 and short blades d^4 , &c., with a V-shaped blade d^8 , the angle of which corresponds to the angle of the short blades on the plate. In Fig. 8, between the plates d^2 , which carry the main blades d^3 , short blades d^4 , and the V-shaped blade d^8 , are arranged intermediate plates d^9 , having a straight blade d^{10} . In Fig 9 the arrangement of blades is similar to those in Fig. 7, but the plates d^2 are more widely separated. The forms shown in Figs. 7 and 8 are preferred for use in a machine having but one carrier d , while the forms shown in Figs. 9, 10, and 11 are preferred for use in a machine having two carriers d and g , the plates of one carrier being so arranged that they will come opposite the space separating the blades of the opposite carrier, this arrangement being indicated by the dotted lines in Figs. 9, 10, and 11 and in full lines in Figs. 4 and 5 of the drawings. In Fig. 10 the main blades d^3 instead of abutting at the center of the plate d^2 abut at one side, and in Fig. 11 the main blades d^3 are curved instead of angular.

In the operation of the machine of the form illustrated in Figs. 1, 2, and 3 the treadle e^{12} is first released and the work passed between the two nipping or feed rollers b^7 and f^2 until it rests upon the table e . The treadle is then depressed, and by the action of the springs e^5 the table e , with the work, is pressed upward against the blades of the traveling carrier d . The flexible carrier d is prevented from bellying inward away from the work by means of a plate k , pressing on the under side of the carrier, as illustrated in Figs. 1 and 2. The plate k is provided with an extension k' , which is bolted or otherwise fixed to the framework a or other immovable part of the machine. The carrier d in traveling brings successive bladed plates upon and over one side of the hide or skin and tends to drag the hide or skin over the table toward the rear end of the machine. This tendency is overcome by the feed or nipping rollers b^7 and f^2 , which tend to pull the hide or skin toward the front end of the machine.

In the machine illustrated in Figs. 4, 5, and 6 the operation is similar to that above described; but in this instance the hide or skin rests upon a semiflexible carrier g and is subjected to two scraping actions, one upon its upper and the other upon its lower face. In this machine both the flesh and grain sides of the hide or skin are operated upon at the same time. In this form of machine, as is the case in the machine of Figs. 1, 2, and 3, only the upper carrier d is prevented from bellying by means of the plate k .

Having thus described the nature and ob-

ject of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character described, an endless flexible traveling carrier, a series
5 of working knives or blades carried thereby, a flexible support upon which the work is adapted to be mounted, two feed-rollers, and means for rotating the feed-rollers and the carrier in directions opposite to each other,
10 substantially as and for the purposes described.

2. In a machine of the character described, an endless flexible traveling carrier, a series
15 of working knives or blades carried thereby, a flexible support upon which the work is adapted to be laid, a treadle mechanism adapted to elevate and depress said support, two feed-rollers, and means for rotating said feed-rollers and the carrier in directions op-

posite to each other, substantially as and for 20 the purposes described.

3. In a machine of the character described, a working tool, comprising an endless flexible belt, and a series of plates secured to said
25 belt and provided with working blades arranged in series, whereof one series comprises main working blades arranged at an angle to each other and the other series comprises short blades or vanes arranged at an angle to the main blades, substantially as and for the 30 purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JOSEPH HALL.

Witnesses:

ANNA HERNS,
ETHEL HALL.