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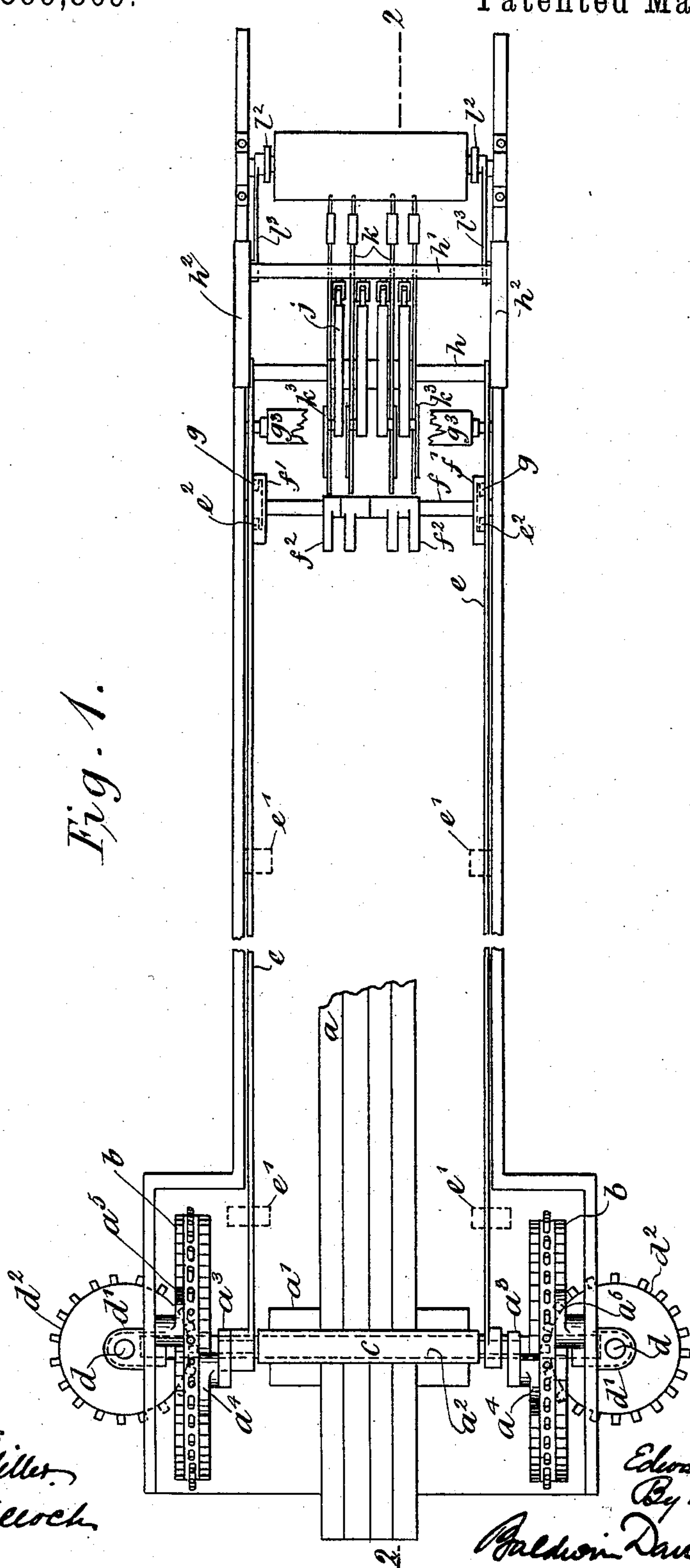
4 Sheets—Sheet 1.

E. F. SARGEANT.
MANUFACTURE OF LEATHER BELTS.

No. 599,869.

Patented Mar. 1, 1898.

Fig. 1.



Witnesses
B. H. Miller.
E. A. Balloch.

Inventor
Edmund F. Sargeant.
By his Attorneys
Baldwin Davidson & Knight.

(No Model.)

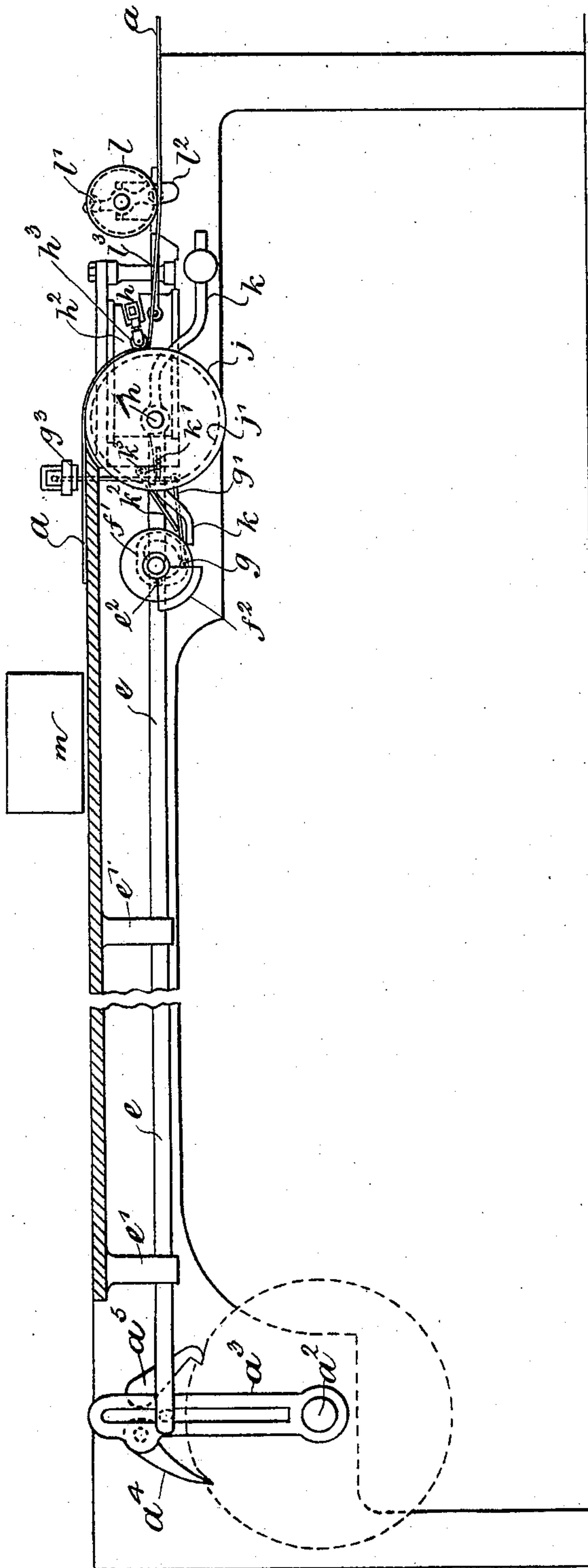
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Fig. 2.



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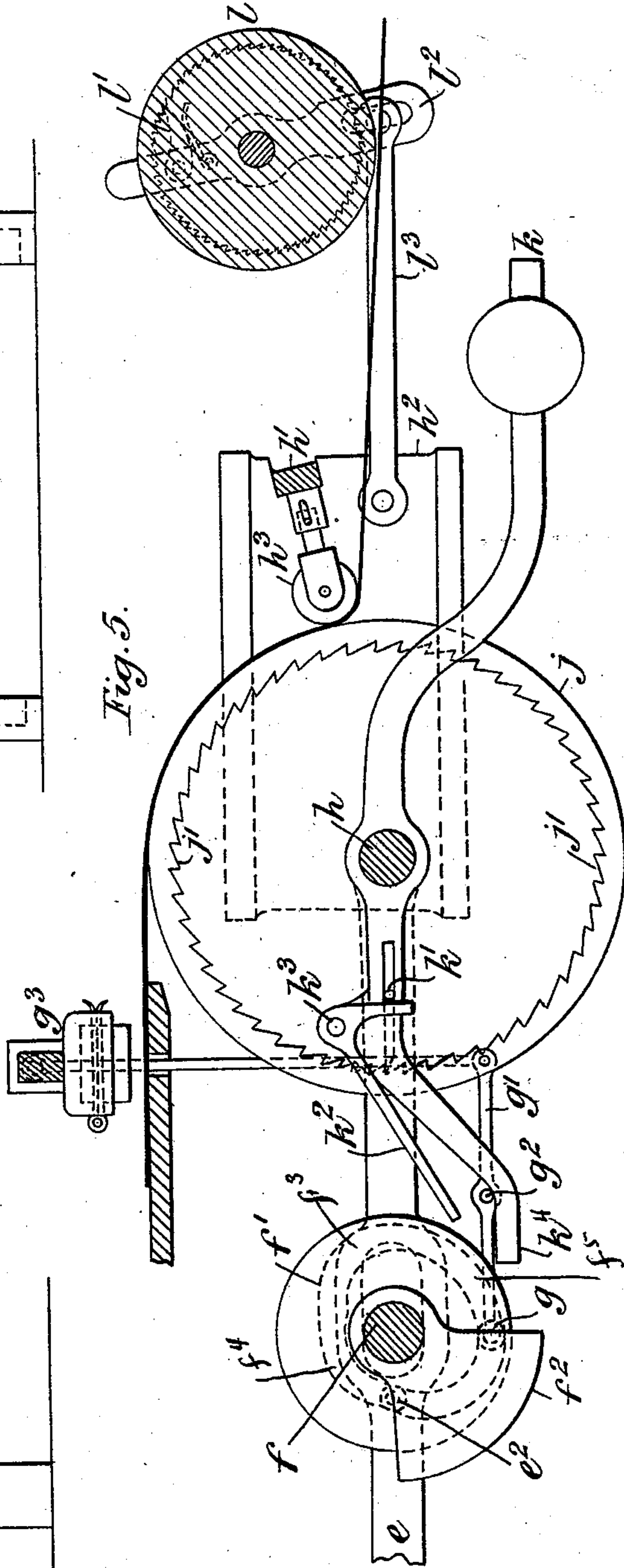
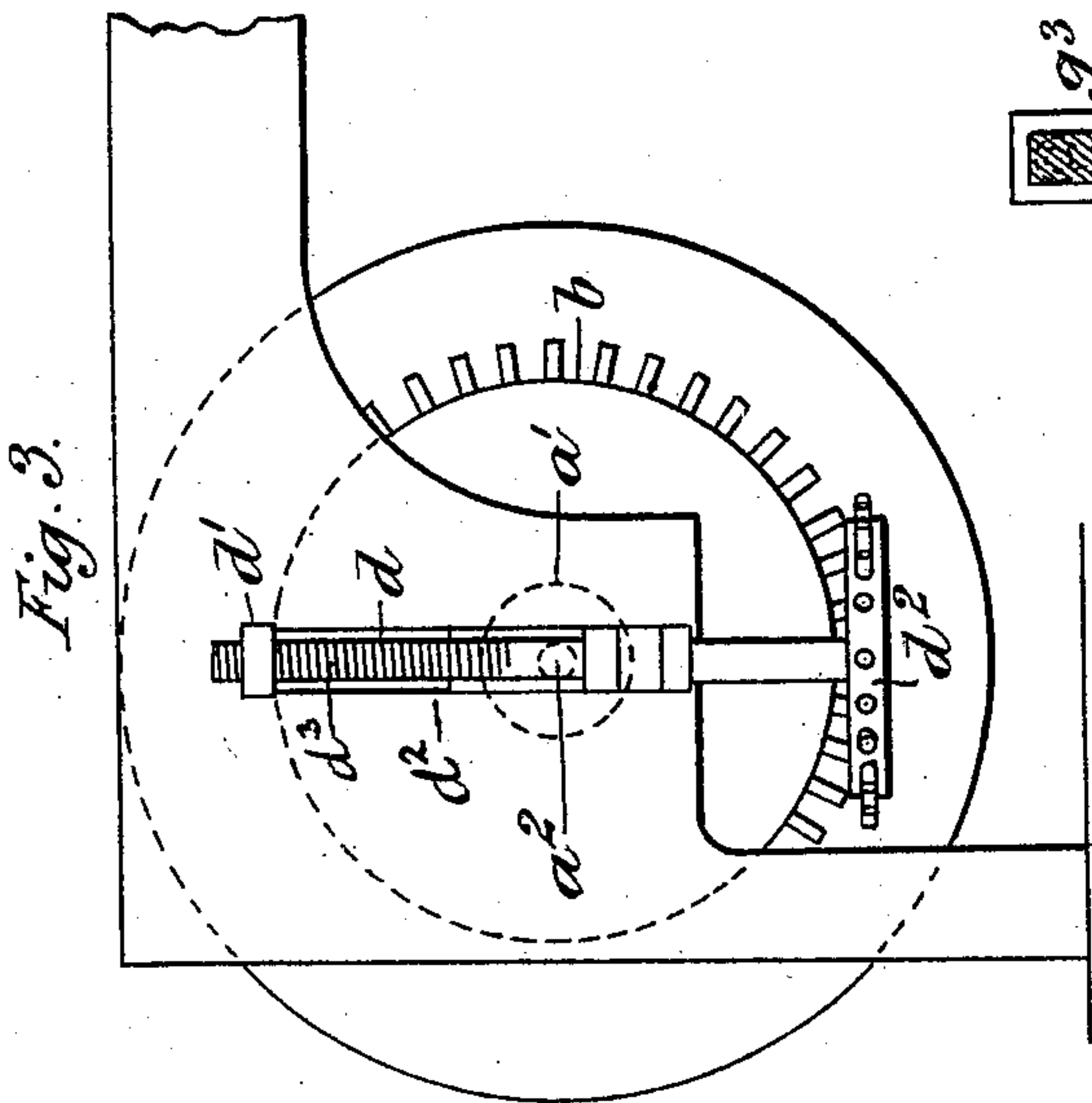
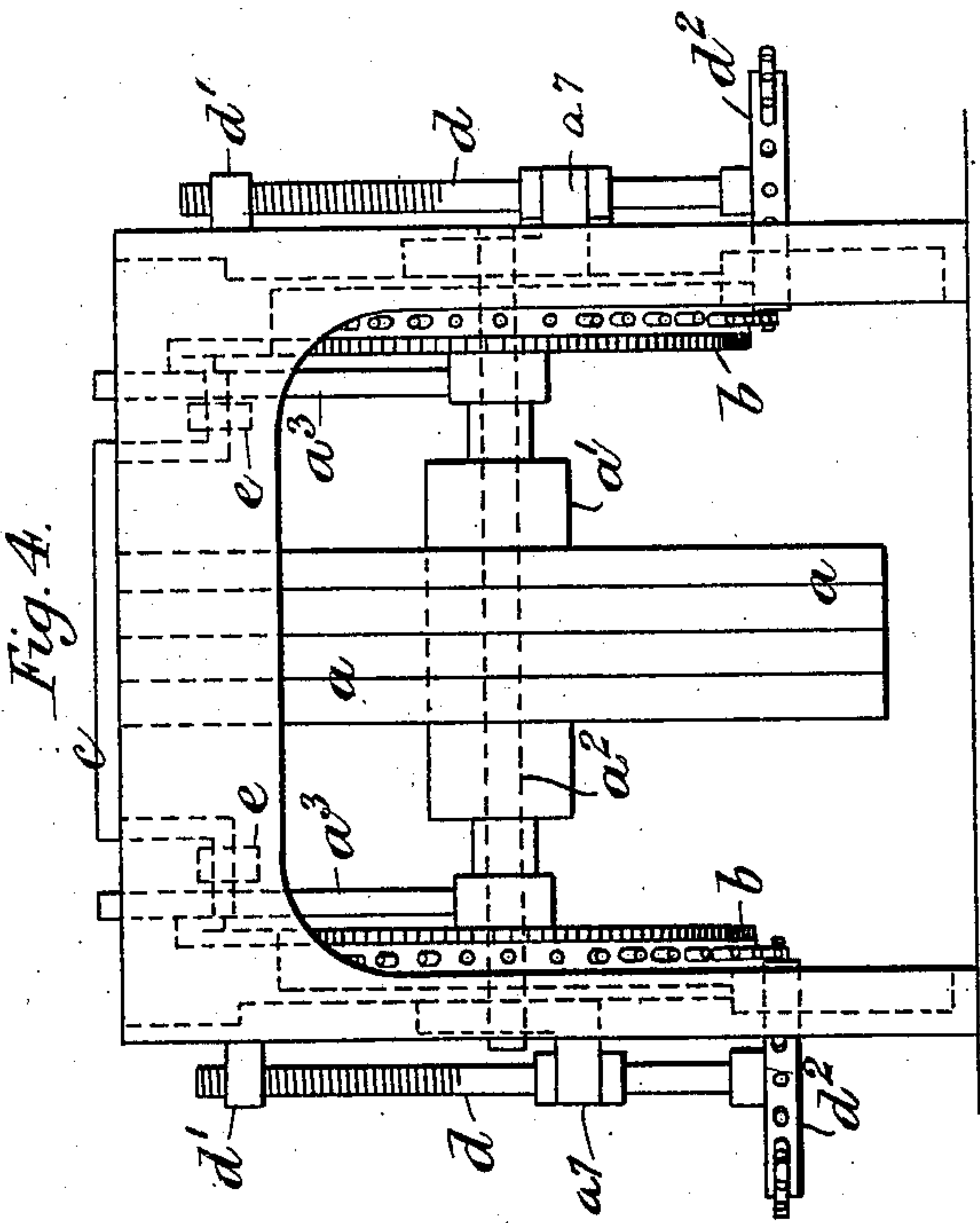
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E. F. SARGEANT.
MANUFACTURE OF LEATHER BELTS.

No. 599,869.

Patented Mar. 1, 1898.



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(No Model.)

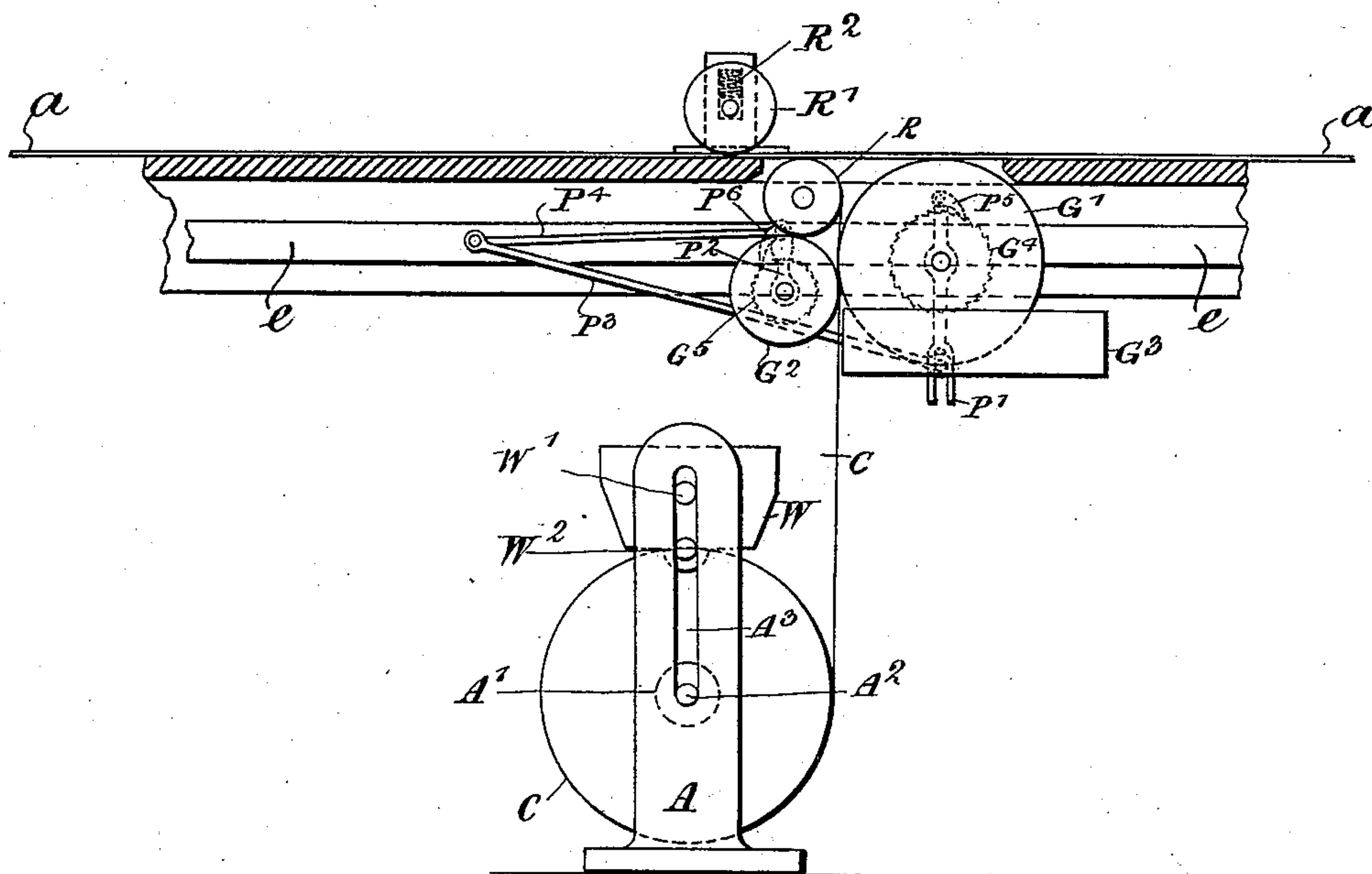
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E. F. SARGEANT.
MANUFACTURE OF LEATHER BELTS.

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Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

EDWARD FRANK SARGEANT, OF STROUD, ENGLAND.

MANUFACTURE OF LEATHER BELTS.

SPECIFICATION forming part of Letters Patent No. 599,869, dated March 1, 1898.

Application filed May 3, 1897. Serial No. 634,918. (No model.)

To all whom it may concern:

Be it known that I, EDWARD FRANK SARGEANT, a subject of the Queen of Great Britain, residing at Linden Villa, Lower street, Stroud, in the county of Gloucester, England, have invented an Improvement in the Manufacture of Leather Belts, of which the following is a specification.

My invention relates to machinery for feeding and stretching long strips of leather arranged close together and for joining the adjacent edges of said strips either directly or by attaching them to a backing to form a single broad belt. The leather employed in making these belts consists of long strips cut spirally from the butt of the hide.

In carrying out my invention I employ a feed-roll actuated intermittently to feed forward parallel leather strips step by step. Each strip passes over a loose pulley, which at regular intervals is caused to turn in a direction opposite to the travel of the strip, thus stretching each strip independently of the others. Suitable mechanism connects these pulleys and this feed-roll with a revolving drum, whose movement is also intermittent and timed relatively to the movement of the feed-roll. The stretched leather strips are wound around this drum, which is mounted in vertically-movable bearings and is provided with mechanism for causing it to be lowered at each revolution a distance equal to the thickness of the leather belts. The object of thus lowering the drum will be hereinafter described. The drum is revolved at a greater surface speed than that of the feed-roll in order that there may be a constant strain or pull to stretch the leather strips. At regular intervals a stapling-machine or welt-stitch-sewing machine operates to unite the leather strips.

Figure 1 is a plan, with the table removed, of the machine; and Fig. 2, a vertical section on the line 2 2, Fig. 1. Fig. 3 is a side elevation of the left-hand end of the machine; Fig. 4, a left-hand end elevation, and Fig. 5 is a sectional elevation of a detail to a larger scale than Figs. 1 to 4. Fig. 6 is a part-longitudinal section showing additions made to the machine when a backing is employed.

a are strips of leather to be connected together, the finished belting being wound on

a horizontal drum a' , to whose shaft a^2 are fixed the vertical pin-wheels b .

c is a strap resting on the top of the belt- 55
ing and whose ends work in slots a^6 in the arms a^3 , which are fixed to the shaft a^2 and carry driving-pawls a^4 . These pawls a^4 and also the retaining-pawls a^5 , pivoted to the frame, engage with ratchet-teeth on the wheels 60
 b . The bearing-blocks a^7 of the shaft a^2 are free to rise up and down in slots in the frame of the machine and are supported on screws d , working up and down in nuts d' , fixed to the frame and which carry pin-wheels 65
 d^2 , gearing with the pin-wheels b , mounted on the shaft a^2 , carrying the drum a' , as before described. The strap c is designed to bear continually on the leather strips a as they are being wound on the drum a' to press 70
them against the said drum and to prevent them from unrolling when the said drum is stationary or is oscillated, as hereinafter described; but as the size of the roll is constantly increasing it will be seen that provi- 75
sion must be made to vary the distance between the strap c and the axis of the drum a' , which is the shaft a^2 , in order that the strap c may continually bear against the top layer of the roll of leather strips a and in order 80
that the top of the roll of leather may remain at the same level and not rise above the frame of the machine. This effect is obtained by mounting the shaft a^2 in vertically-movable bearing-blocks a^7 , carried, as above 85
described, by the screws d , supported in brackets d' , secured to the frame of the machine. The lower ends of the screws d carry horizontal pin-wheels d^2 , which mesh with the vertical pin-wheels b . At each revolution of the drum a^2 the screws d are 90
turned through the medium of the pin-wheels b d^2 , and the pitch of the screw-threads d^3 d^3 causes the bearing-blocks a^7 and the drum a' to be lowered a distance equal to the thickness of the extra layer of leather strips which has just been wound around the drum a' . 95

e are horizontal rods pivoted to the strap c and free to move to and fro in guide-eyes e' . The rods e are slotted to receive the main 100
driving-shaft f and have pivoted to them rollers e^2 , working in a groove in a cam f' , fixed to the shaft f . Motion is transmitted from the driving-shaft f through the medium

of the cam-groove f^3 and slides e to the different parts of the machine, as hereinafter described. In the same cam-groove is a roller g , carried by a lever g' , pivoted at g^2 and operating a presser-foot g^3 . This cam-groove f^3 is formed with two circular portions $f^4 f^5$. When the rollers e^2 and g^2 reach the circular portions $f^4 f^5$ of the cam-groove f^3 , no motion will be transmitted to the slides e nor to the presser-foot g^3 , both of which will remain temporarily stationary. The right-hand ends of the bars e are fixed to the cross-bar h , which, with a second bar h' , connects two sliding plates $h^2 h^2$, working in guides on the frame of the machine.

j are pulleys provided with rings of ratchet-teeth j' and running loose on the bar h . The number of pulleys corresponds with the number of strips to be operated on, and each pulley supports a separate strip a . Each pulley j has a weighted lever k , pivoted to the bar h and carrying a pawl in the form of a spring-bolt engaging with the ratchet-teeth j' . These bolts have fixed to them knobs or pins k' , against which bear the bent levers k^2 , pivoted at k^3 to the levers k .

f^2 are wipers fixed to the shaft f , which act on the tail ends of the levers k^2 and curved ends k^4 of the weighted levers k , thus supporting the weight of said levers and withdrawing the spring-bolts k' from engagement with the ratchet-teeth j' of the pulleys j . This permits the pulleys j to be revolved without resistance in the direction of the travel of the strips a when the latter are fed forward.

h^3 are spring-pressing rollers carried by the bar h' .

l is a feed-roll working in bearings on the frame of the machine and carrying a ring of ratchet-teeth engaging with pawls l' , carried by levers l^2 , operated by connecting-rods l^3 , pivoted to the sliding plates h^2 .

m is a welt-stitch-sewing machine, or it might be a stapling-machine. As such machines are known and form no part of this invention, the details are not shown. It is positively driven in any convenient manner from the shaft f and at the same speed, its revolution being so timed that its operating parts are in engagement with the strips a while the rollers e^2 are in the circular portions of their cam-grooves and the rods e therefore stationary.

The operation is as follows: A stitch having been made, the presser-foot g^3 comes down and holds the strips a stationary. The bars e move to the right, carrying with them the arms a^3 and pawls a^4 , the drum a' being prevented from turning by the pawls a^5 , although rocked slightly by the movement of the rods e . The rods e also carry with them the slides h^2 , pulleys j , and rods l^3 , the pulleys j being free to turn beneath the stationary strips a , since the wipers f^2 are at this time bearing on the levers k^2 and curved levers k^4 , so holding their retaining-bolts out of action and supporting the weighted levers k , as before described.

When the rods e reach their extreme right-hand position, the wipers f^2 pass the levers k^2 and curved ends k^4 of the weighted levers k , so that the bolts again engage with the teeth j' and the presser-foot g^3 rises. The weighted levers k now cause the pulleys j to be revolved in a direction contrary to the line of feed of the strips a , and as the latter are forced against the peripheries of the former by means of the spring-pressure rolls h^3 this reverse movement of the pulleys j draws the strips a taut and stretches them between the said pulleys j and the drum a' . The rods e then move back to the left, and the pawls a^4 , engaging with the teeth on the wheels b , turn the latter and wind up the finished belt, while the pawls l' , engaging with the teeth on the roller l , turn it and feed forward the strips a . When the rods e reach their extreme left-hand position, they remain stationary for a time while another stitch is being made.

It will be observed that at all times, except when the presser-foot g^3 is down, the strips a are each independently held stretched between the drum a' and the pulleys j , each of the latter being able to turn separately under the action of its weighted lever k , the spring-bolt engaging with the ratchet-teeth j' , so that the tension on all the strips is the same, although they may stretch unequally.

When the strips are to be attached to a backing, the parts shown in Fig. 6 are added to the machine to the left of the presser-foot g^3 and between it and the sewing or stapling machine m , if one be used. In this case the machine m may be an ordinary sewing-machine stitching the strips to the backing, or the machine m may be omitted altogether. In this figure A are standards resting on the floor, with a vertical slot A^3 , in which is placed a shaft A^2 , carrying a drum A' , on which is wound a roll of the backing C . A weight W , having pins W' and W^2 , which are guided by the slot A^3 , rests on the top of the roll of canvas and acts as a brake to keep it in tension as it is pulled off. The canvas passes between two gluing-rollers G' and G^2 and over a roller R to the under side of the strips resting on the table. A roller R' , held down by helical springs R^2 , presses on the surface of the leather. Rollers G' , G^2 , and R are preferably made hollow, and their shafts have stuffing-boxes, through which steam or hot water can be circulated. G' revolves in a tank G^3 , heated by gas-jets or otherwise, containing melted glue. On the shafts carrying rollers G' and G^2 are ratchet-wheels G^4 and G^5 and oscillating feed-arms P' and P^2 , carrying at their ends links P^3 and P^4 , which are reciprocated by the rods e , and also pawls P^5 and P^6 . The shaft carrying roller G^2 is preferably mounted in bearings which slide horizontally and having springs which press roller G^2 against G' . The action is as follows: At each forward motion of bar e the strips a are drawn forward, and carry with them the canvas. Glue-rollers G' and G^2 are also revolved from the bar e by

links P^3 and P^4 , oscillating arms P' and P^2 , and pawls P^5 and P^6 . The glue is carried by G' from tank G^3 and is transferred to the canvas, and at the same time the roller G' warms the under side of the strips a . As the strips pass forward roller R' presses the leather and canvas together. The sewing can either be done now or the belt can be wound up and the sewing done at some subsequent time without the intervention of some special device to individually stretch the strips.

If the strips are to be joined by staples, the backing should, as shown, be fed in below them, but if by a welt-stitch-sewing machine above them and the apparatus should be placed above instead of below the table.

The whole gluing device may be omitted and the canvas may be simply sewed to the strips.

In place of joining the strips together at the same time as they are stretched they may be stretched, as above described, and stored in rolls to be afterward joined.

What I claim is—

1. The combination of means for stretching strips of leather side by side, means for feeding them forward together while so stretched, and means for joining them together.

2. The combination of means for feeding strips of leather side by side, means for joining them together, and means for taking up the belt so produced at a faster rate than the feed.

3. The combination of means for feeding strips of leather side by side, means for stretching them individually, a receiving-drum upon which the strips are wound into a roll, and means for driving the roll so that its surface moves at a faster rate than the feed.

4. The combination of means for feeding strips of leather side by side, means for stretching them individually, a receiving-drum on which the strips are wound into a roll, a shaft on which the drum is mounted, bearings for the shaft, means actuated by the shaft whereby the bearings are lowered through a distance equal to the thickness of the strips in each revolution of the shaft, slotted arms fixed to the shaft, ratchet-wheels fixed to the shaft, driving-pawls pivoted to the arms and retaining-pawls engaging with the ratchet-teeth, a strap resting on the strips on the drum and engaging with the arms and reciprocating rods pivoted to the strap.

5. The combination of means for feeding strips of leather side by side, pulleys over which the strips pass, means tending to revolve the pulleys in an opposite direction to the feed, means for taking up the strips and means for driving the take-up at a faster rate than the feed.

6. The combination of means for feeding strips of leather side by side, pulleys over which the strips pass, means tending to revolve the pulleys in an opposite direction to the feed, a receiving-drum on which the strips

are wound into a roll and means for driving the roll so that its surface moves at a faster rate than the feed.

7. The combination of means for feeding strips of leather side by side, pulleys over which the strips pass, means tending to revolve the pulleys in an opposite direction to the feed, a receiving-drum on which the strips are wound into a roll, a shaft on which the drum is mounted, bearings for the shaft, means actuated by the shaft whereby the bearings are lowered through a distance equal to the thickness of the strips in each revolution of the shaft, slotted arms fixed to the shaft, ratchet-wheels fixed to the shaft, driving-pawls pivoted to the arms and retaining-pawls engaging with the ratchet-teeth, a strap resting on the strips on the drum and engaging with the arms and reciprocating rods pivoted to the strap.

8. The combination of means for feeding strips of leather side by side, pulleys over which the strips pass, ratchet-teeth on the pulleys, weighted arms free to turn around the axes of the pulleys, pawls carried by the arms and engaging with the ratchet-teeth, means for supporting the arms and withdrawing the pawls when the feed takes place, a receiving-drum on which the strips are wound into a roll, and means for driving the roll so that its surface moves at a faster rate than the feed.

9. The combination of means for feeding strips of leather side by side, pulleys over which the strips pass, ratchet-teeth on the pulleys, weighted arms free to turn around the axes of the pulleys, pawls carried by the arms and engaging with the ratchet-teeth, means for supporting the arms and withdrawing the pawls when the feed takes place, a receiving-drum on which the strips are wound into a roll, a shaft on which the drum is mounted, bearings for the shaft, means actuated by the shaft whereby the bearings are lowered through a distance equal to the thickness of the strips in each revolution of the shaft, slotted arms fixed to the shaft, ratchet-wheels fixed to the shaft, driving-pawls pivoted to the arms and retaining-pawls engaging with the ratchet-teeth, a strap resting on the strips on the drum and engaging with the arms and reciprocating rods pivoted to the strap.

10. The combination of means for feeding strips of leather side by side, means for stretching them individually, means for joining the strips together, a receiving-drum on which the strips are wound into a roll, a shaft on which the drum is mounted, bearings for the shaft, means actuated by the shaft whereby the bearings are lowered through a distance equal to the thickness of the strips in each revolution of the shaft, slotted arms fixed to the shaft, ratchet-wheels fixed to the shaft, driving-pawls pivoted to the arms and retaining-pawls engaging with the ratchet-teeth, a strap rest-

ing on the strips on the drum and engaging with the arms and reciprocating rods pivoted to the strap.

11. The combination of means for feeding
5 strips of leather side by side, pulleys over which the strips pass, means tending to revolve the pulleys in an opposite direction to the feed, means for joining the strips together,
10 a receiving-drum on which the strips are wound into a roll and means for driving the roll so that its surface moves at a faster rate than the feed.

12. The combination of means for feeding
15 strips of leather side by side, pulleys over which the strips pass, means tending to revolve the pulleys in an opposite direction to the feed, means for joining the strips together, a receiving-drum on which the strips are
20 is mounted, bearings for the shaft, means actuated by the shaft whereby the bearings are lowered through a distance equal to the thickness of the strips in each revolution of the shaft, slotted arms fixed to the shaft, ratchet-
25 wheels fixed to the shaft, driving-pawls pivoted to the arms and retaining-pawls engaging with the ratchet-teeth, a strap resting on the strips on the drum and engaging with the arms and reciprocating rods pivoted to the
30 strap.

13. The combination of means for feeding
35 strips of leather side by side, pulleys over which the strips pass, ratchet-teeth on the pulleys, weighted arms free to turn around the axes of the pulleys, pawls carried by the arms and engaging with the ratchet-teeth, means for supporting the arms and withdrawing the pawls when the feed takes place, means for
40 joining the strips together, a receiving-drum on which the strips are wound into a roll, and means for driving the roll so that its surface moves at a faster rate than the feed.

14. The combination of means for feeding
45 strips of leather side by side, pulleys over which the strips pass, ratchet-teeth on the pulleys, weighted arms free to turn around the

axes of the pulleys, pawls carried by the arms and engaging with the ratchet-teeth, means for supporting the arms and withdrawing the
50 pawls when the feed takes place, means for joining the strips together, a receiving-drum on which the strips are wound into a roll, a shaft on which the drum is mounted, bearings for the shaft, means actuated by the shaft whereby the bearings are lowered through a
55 distance equal to the thickness of the strips in each revolution of the shaft, slotted arms fixed to the shaft, ratchet-wheels fixed to the shaft, driving-pawls pivoted to the arms and retaining-pawls engaging with the ratchet-
60 teeth, a strap resting on the strips on the drum and engaging with the arms and reciprocating rods pivoted to the strap.

15. The combination of means for feeding
65 strips of leather side by side on a backing, a receiving-drum upon which the strips and backing are wound into a roll and means for driving the roll so that its surface moves at a faster rate than the feed.

16. The combination of means for stretch-
70 ing strips of leather side by side upon a backing, means for feeding them forward while so stretched with the backing and means for joining them and the backing together.

17. The combination of means for feeding
75 strips of leather side by side on a backing, means for joining them and the backing together and means for taking up the belt so produced at a faster rate than the feed of the strips.
80

18. The combination of means for feeding
strips of leather side by side on a backing, means for stretching the strips individually, a receiving-drum on which the strips and
85 backing are wound into a roll and means for driving the roll so that its surface moves at a faster rate than the feed of the strips.

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