A. S. JAQUITH.

AUTOMATIC SELF-DRIVEN FILLET MACHINE FOR APPLYING METALLIC LEAF.

APPLICATION FILED MAR. 18, 1915.

1,169,830.

Patented Feb. 1, 1916.

5 SHEETS—SHEET 1.

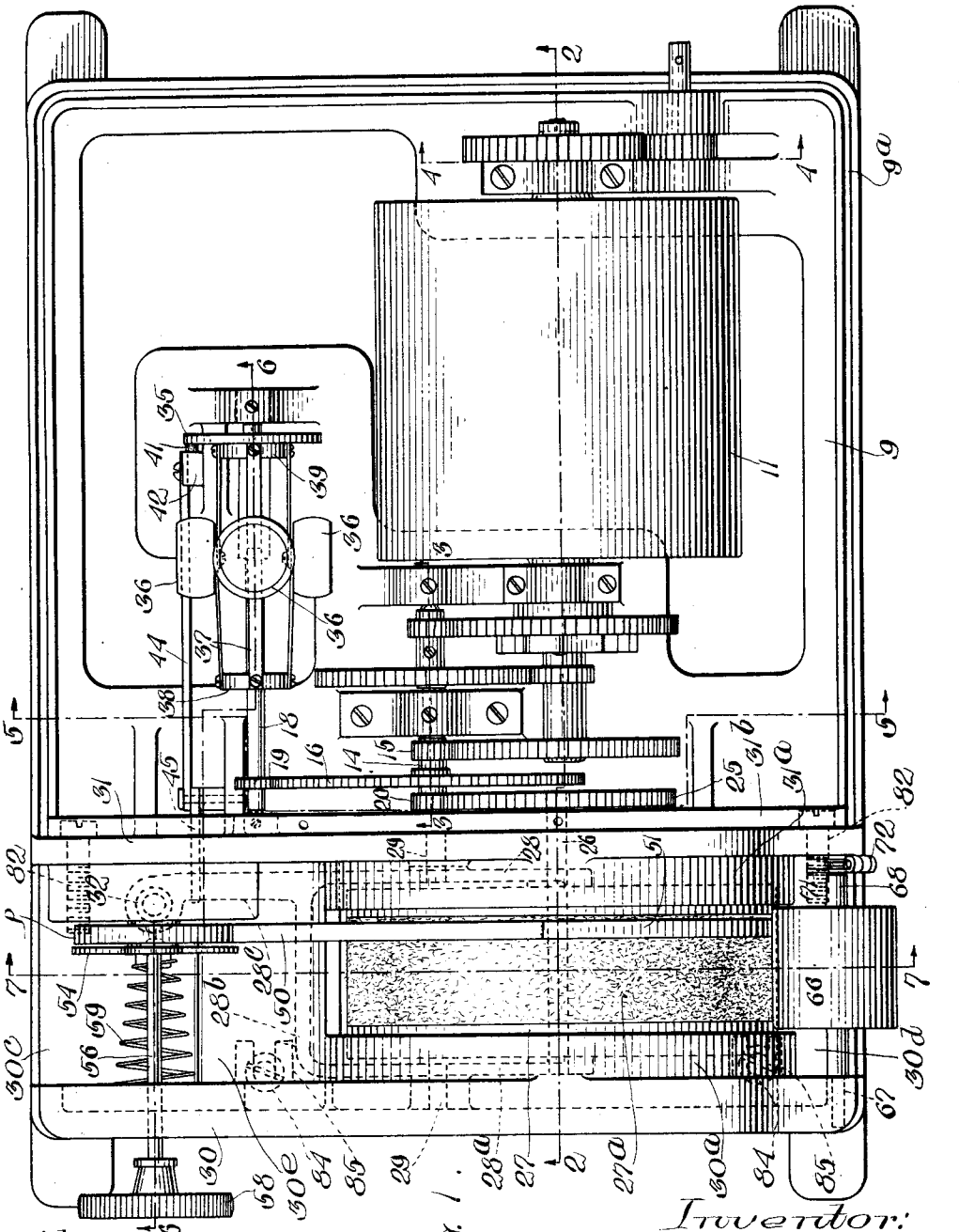

Fig. 1.

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Fig. 2.

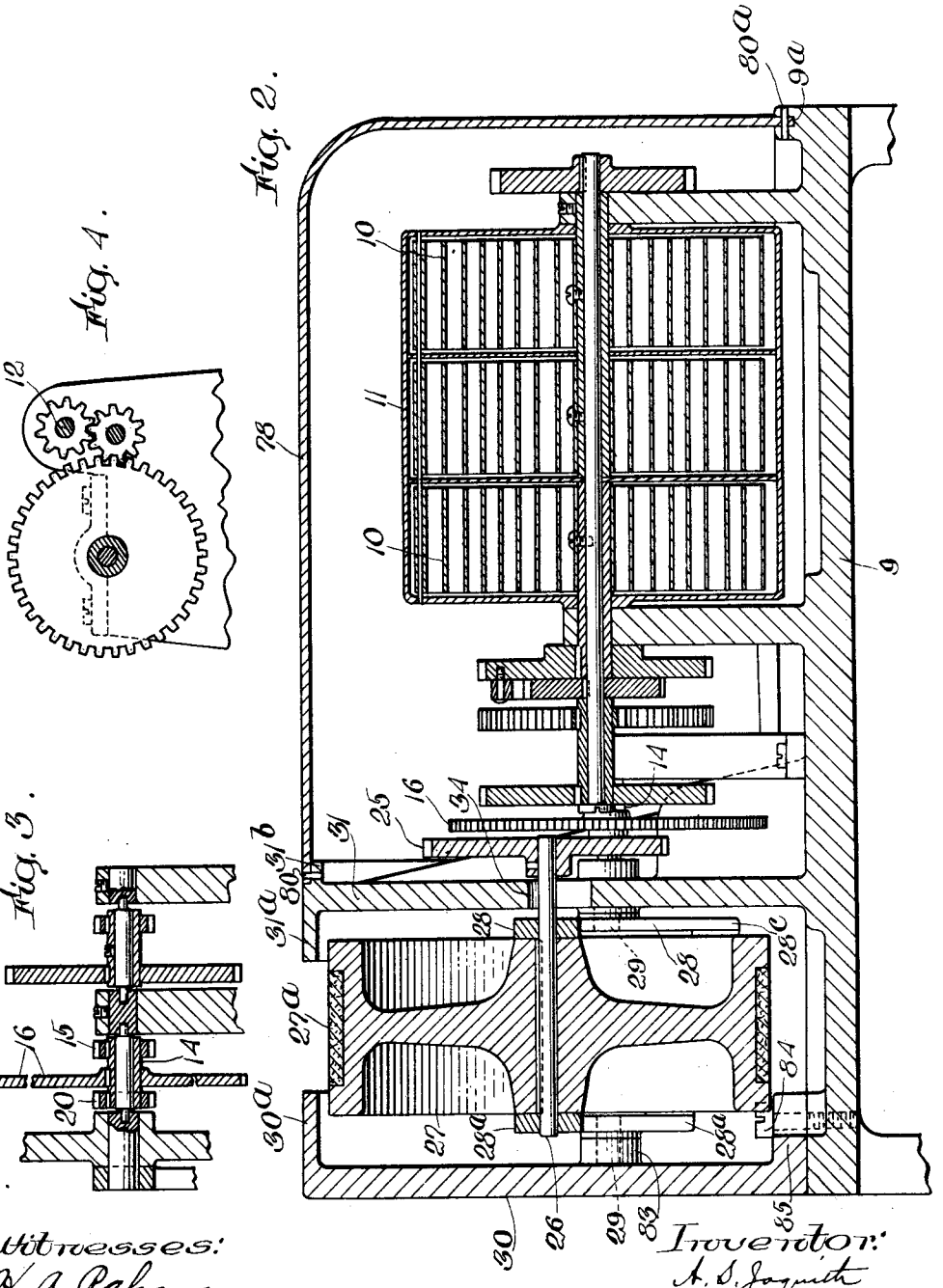

Fig. 4.

Fig. 3.

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Fig. 5.

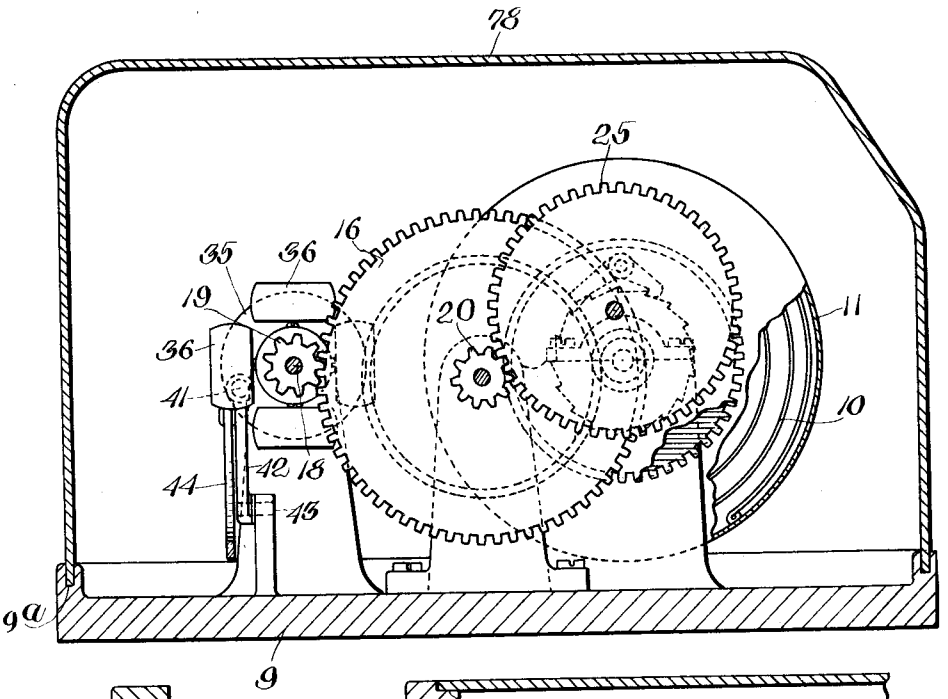

Fig. 6.

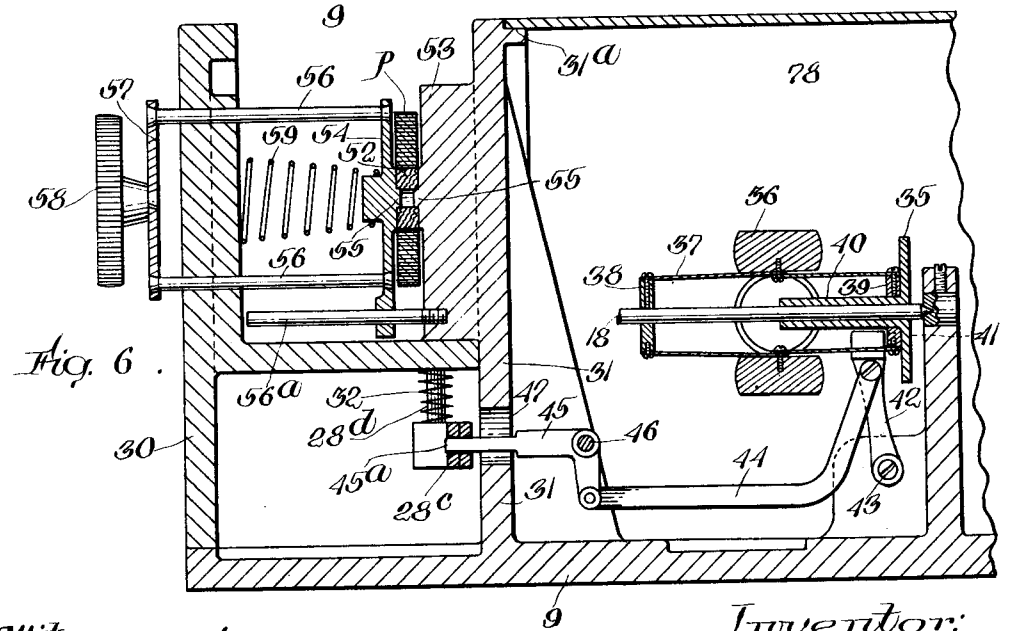

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Fig. 7.

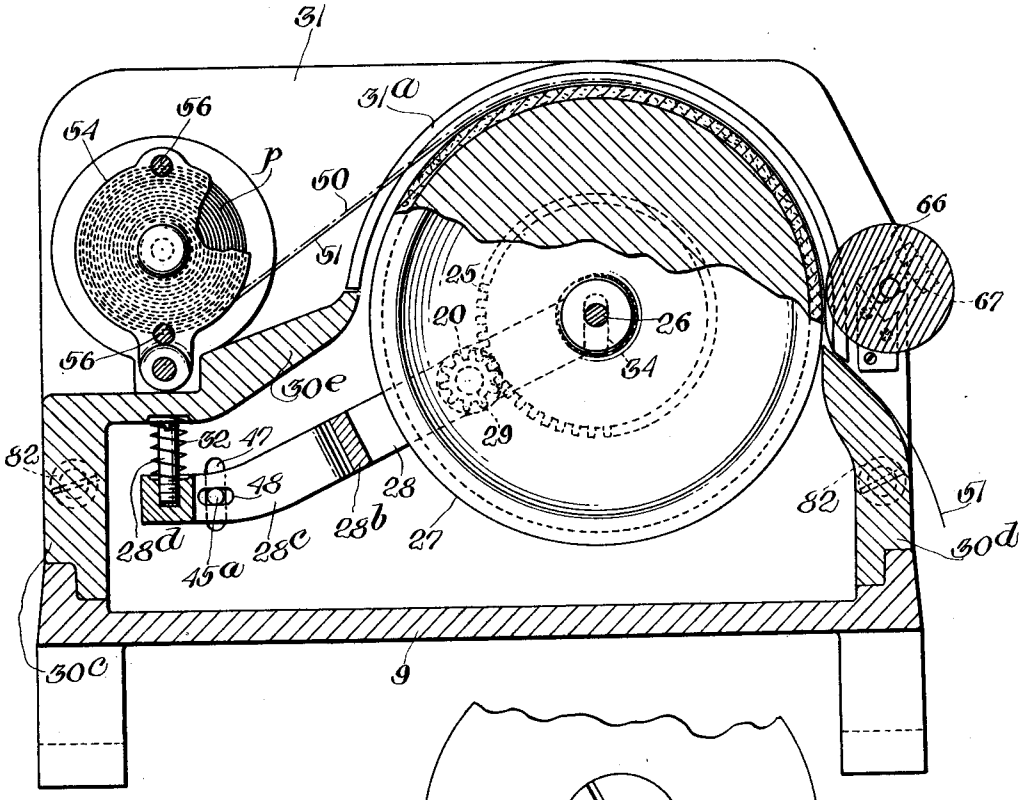
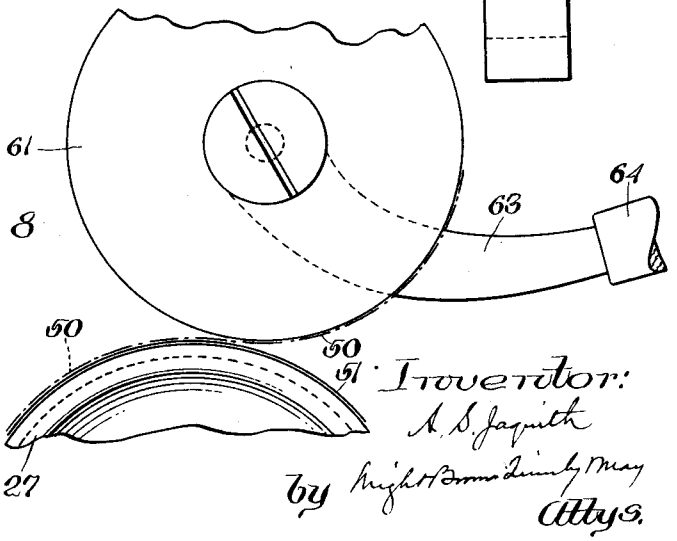


Fig. 8



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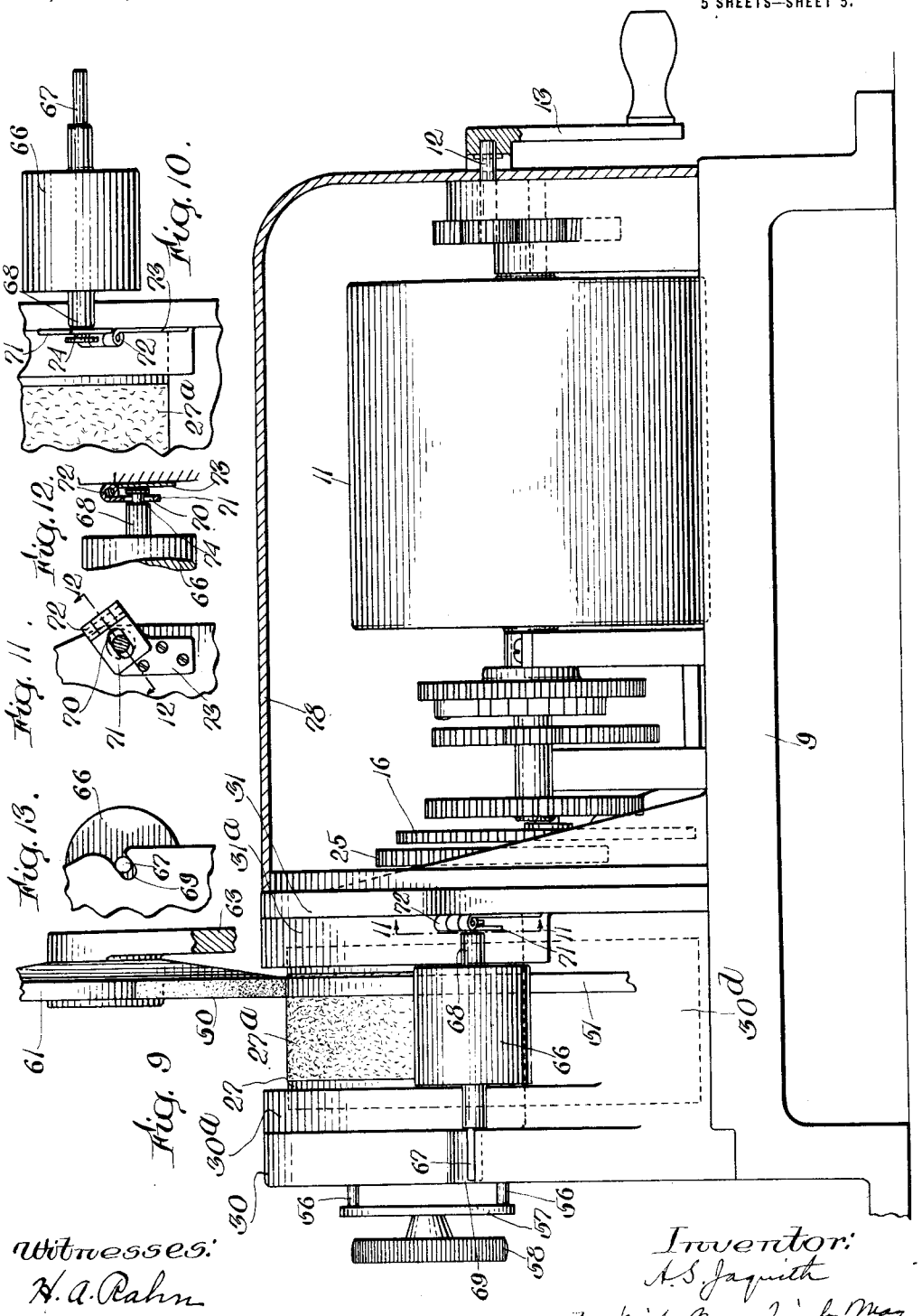
5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC SELF-DRIVEN FILLET-MACHINE FOR APPLYING METALLIC LEAF.

1,169,830. Specification of Letters Patent. Patented Feb. 1, 1916.

Application filed March 18, 1915. Serial No. 15,253.

To all whom it may concern:

Be it known that I, ADELBERT S. JAQUITH, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Automatic Self-Driven Fillet-Machines for Applying Metallic Leaf, of which the following is a specification.

This invention relates to machines for transferring from a package roll to a fillet roll, a fillet of metallic leaf, such as gold, silver, etc., the fillet adhering to the fillet roll and being transferable thereby to a surface to be ornamented.

The invention is embodied in a machine in which the portion of the fillet passing to the fillet roll is supported by and moves on a feeding member such as a rotary drum, until it is taken up by the fillet roll, the feeding member being yieldingly supported in a given normal position and shiftable therefrom by pressure of the fillet roll on the feeding member, such depression causing a fillet-feeding movement to be imparted to the feeding member by a suitable power mechanism or motor, the organization being such that the feeding movement of the feeding member is automatically stopped when the fillet roll is removed and the feeding member returns automatically to its normal position.

The invention is also embodied in various improvements relating to the means for rotatably confining the package roll under tension, to means for feeding from the machine the paper strip which separates the convolutions of the fillet, and to other parts of the machine.

Of the accompanying drawings forming a part of this specification: Figure 1 represents a top plan view of a machine embodying my invention, the cover hereinafter referred to being removed; Fig. 2 represents a section on line 2—2 of Fig. 1, showing the cover in place: Fig. 3 represents a section on line 3—3 of Fig. 1: Fig. 4 represents a section on line 4—4 of Fig. 1; Fig. 5 represents a section on line 5—5 of Fig. 1; Fig. 6 represents a section on line 6—6 of Fig. 1: Fig. 7 represents a section on line 7—7 of Fig. 1; Fig. 8 represents a side view of a portion of the drum and the fillet roll applied thereto; Fig. 9 represents a side elevation of the machine, the cover being shown in section; Figs. 10, 11, 12 and 13 represent fragmentary views illustrating the means for supporting the pressure roll hereinafter described.

The same reference characters indicate the same or similar parts in all the views.

The machine of my invention includes a motor which is preferably spring driven. To illustrate the invention I have shown a spring motor of the type employed to drive the record cylinder of a phonograph, said motor developing a relatively low degree of power and being adapted to be quickly stopped by the application of a relatively light motion-resisting force.

The motor illustrated is mounted on a base 9, forming a part of the general supporting frame. The motor includes a series of springs 10 (Figs. 2 and 5) inclosed in a case 11, means including a crank shaft 12 having a crank 13 for winding the springs, and a train of shafts and gearing driven by the springs, the several shafts being journaled in bearings supported on the base as shown. Said train includes a short shaft 14 (Figs. 1 and 3) having a small gear 15 driven by the springs through the intermediate gearing shown, and a larger gear 16. In a motor of this type the speed is controlled by governor and brake mechanism acting through a shaft 18 having a gear 19 meshing with the gear 16, said shaft having a brake flange 35 against which a brake shoe is pressed by the centrifugally operated means commonly employed, and shown by Figs. 1, 5 and 6.

The mechanism thus far briefly described is so well known in phonograph motors that a description of the connections between the small gear 15 of the shaft 14 and the motor springs is not deemed essential. The shaft 14 has another small gear 20 which has been added by me to the described motor mechanism. The gear 20 meshes with a larger gear 25 which is attached to the shaft 26 (Figs. 2 and 7) of a feeding member, which as here shown is a traction roll or drum 27, over which a fillet of metallic leaf is passed to be taken up by a hand-operated fillet roll or a gilding die, as hereinafter described. The drum shaft 26 is journaled in bearings formed in an oscillatory or shiftable drum-supporting le-

ver, the form of which is clearly shown by dotted lines in Fig. 1, said lever being composed of two members 28, 28^a, a neck 28^b connecting said members, and an extension 28^c of the member 28. The members 28, 28^a are fulcrumed at 29, 29, on upright frame members 30, 31, formed on the base 9, the alined fulcrums being arranged in alinement with the shaft 14, as indicated by Fig. 7. The drum 27 is normally supported in a given position by the said supporting lever and by a spring 32 acting thereon, and is shiftable therefrom by downward pressure on its upper surface without disturbance of the engagement of the gears 20 and 25, the gear 25 being shiftable with the drum and remaining in engagement with the gear 20 during its shifting movements. The drum-supporting lever has a two-part arm formed by the portions of the members 28, 28^a at one side of the axis of oscillation, said members supporting the shaft 26 and drum 27, and another arm formed by the portions of said members at the opposite side of said axis, and by the extension 28^c. The drum supporting lever is subjected to the biasing action of a spring 32 (Fig. 7) which presses downwardly on the extension 28^c of said lever and thus holds the two-part arm of said lever and the drum supported thereby yieldingly raised, the spring 32 being sufficiently strong to support the drum in a raised position, so that the drum is depressible or shiftable by downward pressure exerted upon it, the lever being swung on its fulcrum axis by the depression of the drum to raise its spring-pressed arm.

The frame member 31 has a slot 34 through which the shaft 26 passes, said slot permitting the shaft and roll to move vertically. The downward movement of the drum 27, caused by the downward pressure of a fillet roll on the highest portion of its periphery, is utilized through the means next described to start the motor and cause the rotation of the drum. The brake flange 35 (Figs. 1 and 6) is connected with the shaft 18 to rotate with it, but as here shown is movable lengthwise of the shaft by the action of governor weights 36 carried by springs 37, which are attached at their respective ends to a collar 38 fast on the shaft 18 and a collar 39 fast on a sleeve 40 formed with the flange 35.

41 (Figs. 1, 5 and 6) represents a brake shoe mounted on the swinging end of an oscillating carrier 42 which is pivoted at 43 (Fig. 6) and normally holds the shoe 41 against one side of the flange 35, so that the shoe prevents rotation of the said flange and of the shaft 18. The brake shoe carrier 42 is connected by a rod 44 with one arm of a bell crank lever 45 (Fig. 6) which is fulcrumed at 46 and has on its other arm an extension 45^a which extends through a slot 47 in the frame member 31 and enters a slot 48 (Fig. 7) in the spring-pressed portion 28^c of the drum-supporting lever.

The described parts are so arranged that a slight depression of the drum 27 will raise the lever extension 28^c sufficiently to cause the bell crank lever 45 and rod 44 to swing the shoe carrier 42 away from the flange 35, and thus permit the rotation of the shaft 18. It follows, therefore, that the depression of the drum starts the motor and causes the rotation of the drum. Upon the removal of downward pressure from the drum, the spring 32 acts to raise the drum and at the same time set the brake shoe against the flange 35, thus stopping the motor and the drum. When the motor is running, the governor acts to move the flange 35 toward the brake shoe and into sufficient contact therewith to reduce the speed in case it becomes more than normal. As hereinbefore stated, the governor is not of itself a part of my invention. In fact, the governor illustrated may be dispensed with, the flange 35 being attached immovably to the shaft 18 in case automatic speed regulation is not desired.

The fillet 50 of metallic leaf, shown by broken lines in Figs. 7 and 8, is wound with a paper strip 51 on a core 52 (Fig. 6), the convolutions of the fillet and strip alternating, and the whole constituting a package roll designated by the reference p in Figs. 5 and 6. Said package roll is rotatably supported between a fixed head 53 on the frame member 31 formed to bear on one side of the core 52, and a movable head 54 formed to bear on the opposite side of said core, said heads having bosses 55 entering the bore of the core. The movable head 54 is attached to rods 56 which are slidable in guides in the frame member 30, and are connected by a cross bar 57 having a knob or handle 58. A spring 59 interposed between the frame member 30 which constitutes a fixed spring abutment and the head 54, presses the latter against the core. The fixed head 53 and the spring abutment portion of the fixed frame member 30 are separated by a relatively wide invariable space containing the movable head, the spring, and a package roll. The heads 53 and 54 are adapted to confine package rolls p of various widths, the spring 59 yielding to accommodate the width of the roll, and being of tapering or conical helical form, so that its convolutions nest into each other when the spring is compressed. The tension or pressure of the spring on the movable head 54 is therefore automatically regulated according to the width of the package roll. If the roll is relatively narrow or of minimum width, it requires less spring pressure than a wider roll. The conical form of the spring enables the spring to be compressed with a

constantly increasing pressure and without interference of its convolutions with each other, until the spring assumes approximately a flat spiral form with all its convolutions in close proximity to the fixed abutment. The conical spring therefore enables a much wider roll to be employed, without adjustment of the abutment, than would be possible if the spring were helical with all its convolutions of the same diameter. The pressure of the conical spring is greater on a relatively wide roll than on a roll of minimum width, there being no limitation of the spring pressure by interference of the convolutions with each other. The movable head 54 is readily displaceable by the knob or handle 58.

The drum 27 has a peripheral face 27ª of yielding frictional material, such as felt, leather, etc. When the fillet roll 61 carried by the usual shank 63 and handle 64 (Figs. 8 and 9) is pressed downwardly on a fillet 50 resting on the drum, the pressure causes the rotation of the drum as above stated, and the fillet adheres to the periphery of the roll, which is usually heated preparatory to use, the fillet being thus separated from the strip 51, which is carried away by the rotation of the drum. The fillet is subsequently applied as usual by the roll to the surface to be ornamented.

Fig. 6 shows a steady pin 56ª attached to the fixed head 53 and passing through an orifice in the movable head 54 to prevent the binding or cramping of the rods 56 in their guides. A pressure roll 66 bearing loosely on the periphery of the drum holds the strip 51 against a part of said periphery, as shown by Fig. 7, and insures the separation of the strip from the fillet. Said pressure roll has trunnions 67, 68, which rotate in bearings formed by an inclined recess 69 (Fig. 13) in one of the frame members, and by an inclined slot 70 (Fig. 11) in a plate 71, which is connected by a hinge 72 with a fixed plate 73 on another frame member. The hinge is inclined, and the trunnion 68 has a groove 74 (Fig. 12) engaging the plate 71 to prevent separation of the trunnion 68 therefrom, as shown by Fig. 12. The pressure roll 66 is adapted to be displaced, as shown by Fig. 10, by a swinging movement of the plate 71. When the roll is returned to its operative position, its trunnions are free to slide in the recess 69 and slot 70 toward and from the drum 27. The weight of the pressure roll is therefore sufficient to hold it operatively against the strip, no springs being required. The frame members 30 and 31 are provided with flanges 30ª and 31ª which overhang portions of the drum and are separated by a space wide enough to expose the facing 27ª. A removable cover 78, fitted at its edges on a seat 31ᵇ on the frame member 31, and in a groove 9ª in the base 9, forms, with said base and frame member, a casing inclosing the motor and the described gearing. It will now be seen that the drum is started by the pressure of the fillet roll against it, and stopped when the pressure is removed. The spring 59 and head 54 exert sufficient pressure on the package roll p to prevent loose rotation thereof, so that the fillet and the paper strip stop instantly when the fillet roll is removed, and are not fed forward by any slight continuation of the rotation of the drum due to its momentum after the removal of the fillet roll, hence there is no waste of the fillet. The lever extension 28ᵉ is preferably provided with a stop stud 28ᵈ arranged to abut against a fixed frame member above it and limit the depression of the drum by the fillet roll. The shiftable strip-and-fillet feeding member or drum 27 may be used with a motor or driving mechanism of any other suitable type and construction, the organization being such that the motor is caused to operate by the shifting of the drum from its normal position, and is automatically stopped by the return of the drum to its normal position.

As above stated, the casing or cover 78, the frame base 9, and the frame member 31 entirely inclose the motor and the gearing. To prevent tampering with the said inclosed mechanism I prefer to secure the cover 78 by practically invisible or secret means, so that the cover can be removed only by an authorized person having knowledge of said means. I have embodied the secret cover-securing means in small pins 80 (Fig. 2), driven into registering holes in the cover 78 and in the seat 31ᵇ on the frame member 31, and similar pins 80ª driven into registering holes in the cover and in the portion of the base 9 in which the groove 9ª is formed. Said pins have a close driving fit in the holes and are so small that their outer ends are practically invisible and can be detected only by a person having knowledge of their location. The pins may be ejected inwardly to release the cover by a small punch driven against their outer ends.

The frame member 31 is preferably formed as an integral part of the base 9, and the frame member 30 is formed independently and provided with integral flanges 30ᵉ and 30ᵈ (Figs. 1, 7 and 9), one located behind and the other in front of the drum 27, as shown by Fig. 7, said flanges abutting against the frame member 30, and being secured thereto by screws 82 (Figs. 1 and 7). The said screws are inserted from the space under the cover 78, so that they are inaccessible when the cover is in place. The detachable frame member 30 is secured to the base by screws 84 (Figs. 1 and 2) inserted in the base and engaged with slotted ears 85 on the member 30, the ears being

movable horizontally under the heads of the screws.

One of the fulcrum studs 29 is attached to the frame member 30, as shown by Fig. 2. The drum 27 and its supporting lever are installed before the frame member 30 is located and secured, said member being then moved horizontally inward on the base until its ears 85 engage the screws 84, and its flanges 30^c and 30^d abut against the frame member 31, the fulcrum stud 29 carried by the member 30 being at the same time engaged with the drum-supporting lever. The screws 82 are then inserted to confine the frame member 30 in place, this being done before the cover 78 is applied and secured. The flange 30^c is provided with an extension 30^e (Fig. 7) projecting toward the rear side of the drum and covering the lever portions 28^b, 28^c and 28^d. The flange 30^d is curved at its upper portion into close proximity to the front side of the drum, the outer side of said flange forming a guide for the paper strip 51.

It will now be seen that the detachable frame member 30 and its flanges coöperate with the frame member 31 and the base in forming an inclosure which contains the drum and its shiftable supporting lever, and is interrupted only by an opening exposing only the upper portion of the periphery of the drum. The detachable frame member can only be removed by withdrawing the screws 82, and this can be done only when the cover 78 is removed, hence the securing of the cover in the manner above described prevents access to the main portion of the drum and to the drum-supporting means.

Having described my invention, I claim:

1. A machine of the character stated comprising a fillet-feeding member, a motor constantly engaged with said member to impart a feeding movement thereto, means yieldingly supporting the feeding member in a normal position and permitting its displacement therefrom by pressure on said member, and motor-controlling means associated with said supporting means and acting to prevent the action of the motor when the feeding member is in its normal position, and to permit the action of the motor and the feeding movement of the feeding member thereby when the feeding member is displaced from its normal position.

2. A machine of the character stated comprising a fillet-feeding member, a motor constantly engaged with said member to impart a feeding movement thereto, means yieldingly supporting the feeding member in a normal position and permitting its displacement therefrom by pressure on said member, motor-controlling means associated with said supporting means and acting to prevent the action of the motor when the feeding member is in its normal position, and to permit the action of the motor and the feeding movement of the feeding member thereby when the feeding member is displaced from its normal position, and speed-governing means associated with said motor-controlling means and acting to regulate the speed of the motor and feeding member.

3. A machine of the character stated comprising an oscillatory lever formed as a frame and fulcrumed on a fixed support, a fillet-feeding drum journaled in one arm of said lever and having a gear concentric with its axis, said drum and gear being shiftably supported by the lever, a motor including a shaft journaled in fixed bearings in alinement with the fulcrum of said lever and provided with a gear meshing constantly with the drum gear, yielding means supporting the lever and drum in a normal position and permitting the displacement of the drum from said position by pressure on the drum, and motor-controlling means associated with said yielding means and lever, and acting to prevent the action of the motor when the drum is in its normal position, said controlling means permitting the action of the motor and the rotation of the drum thereby when the drum is displaced from its normal position.

4. A machine of the character stated comprising an oscillatory lever formed as a frame and fulcrumed on a fixed support, a fillet-feeding drum journaled in one arm of said lever and having a gear concentric with its axis, said drum and gear being shiftably supported by the lever, a motor including a shaft journaled in fixed bearings in alinement with the fulcrum of said lever and provided with a gear meshing constantly with the drum gear, yielding means acting on the other arm of said lever to yieldingly support the drum in a normal position, a motor-controlling shaft geared to the motor and having a brake flange, a brake shoe coöperating with said flange, and connections between the said brake shoe and lever acting to press the shoe against the brake flange and stop the motor when the drum and lever are displaced from their normal position.

5. A machine of the character stated comprising an oscillatory lever formed as a frame and fulcrumed on a fixed support, a fillet-feeding drum journaled in one arm of said lever and having a gear concentric with its axis, said drum and gear being shiftably supported by the lever, a motor including a shaft journaled in fixed bearings in alinement with the fulcrum of said lever and provided with a gear meshing constantly with the drum gear, yielding means acting on the other arm of said lever to yieldingly support the drum in a normal position, a motor-controlling shaft geared to the motor and having a brake flange, a brake shoe coöperating with said flange, connections between the

said brake shoe and lever acting to press the shoe against the brake flange and stop the motor when the drum and lever are displaced from their normal position, said brake shoe being movable longitudinally of the said controlling shaft, and centrifugal speed-governing means associated with said shaft and flange, and adapted to press the flange against the shoe when the motor is running.

6. A machine of the character stated comprising an oscillatory lever formed as a frame and fulcrumed on a fixed support, a fillet-feeding drum journaled in one arm of said lever and having a gear concentric with its axis, said drum and gear being shiftably supported by the lever, a motor including a shaft journaled in fixed bearings in alinement with the fulcrum of said lever and provided with a gear meshing constantly with the drum gear, a spring acting on the other arm of said lever to yieldingly support the drum in a normal position, a motor-controlling shaft geared to the motor, and having a brake flange, an oscillatory carrier pivoted to a fixed support and provided with a brake shoe adapted to engage said flange, a bell-crank lever fulcrumed on a fixed support adjacent to said carrier and having o of its arms engaged with the drum-supporting lever, and a rod connecting the other arm of the bell-crank lever with the brake shoe carrier.

7. A machine of the character stated comprising a shiftable drum yieldingly maintained in a normal position, a motor engaged with the drum to impart a feeding movement thereto, means operated by a shifting movement of the drum from its normal position to permit the action of the motor and the rotation of the drum thereby, the motor being automatically stopped when the drum returns to its normal position, and fillet-controlling means acting to prevent feeding movement of a fillet by loose rotation of the drum after the stoppage of the motor.

8. A fillet machine having package roll supporting means comprising a fixed head formed to bear on one end of the core of a package roll, a fixed frame member forming a spring abutment facing said head and separated therefrom by a relatively wide invariable space, a movable head formed to bear on the opposite end of said core, and movable toward and from the fixed head, means being provided for preventing the rotation of the movable head, and a tension spring interposed between the abutment and the movable head and acting to press the latter against the package roll, said spring being of tapering or conical form permitting it to be stored compactly at one side of said space and exert pressure on the movable head automatically proportioned to the width of the package roll, without adjustment of the abutment.

9. A machine of the character stated comprising a fillet-feeding drum, means for rotating the same, heads at the rear side of the drum adapted to rotatably confine a package roll carrying a rolled fillet, one of said heads being movable relatively to the other, and provided with guide rods movable in fixed guides, a cross bar connecting the outer ends of said rods and provided with a handle, and a tension spring located between said guide rods and acting on said movable head.

10. A machine of the character stated comprising a fillet-feeding roll, means for rotating the same, means at the rear side of the roll for exerting tension on a package roll carrying a rolled fillet and a rolled paper strip, and a yielding pressure roll at the front side of the drum pressed toward the drum by its own weight and adapted to coöperate with the drum in controlling and removing the paper strip.

11. A machine of the character stated comprising a fillet-feeding roll, means for rotating the same, means at the rear side of the roll for exerting tension on a package roll carrying a rolled fillet and a rolled paper strip, a yielding pressure roll at the front side of the drum, said roll having trunnions, a plate hinged to a fixed support and having an inclined slot engaged with one of said trunnions, and a fixed frame member having an inclined recess engaging the other trunnion, the roll being displaceable with said plate and pressed by its own weight toward the drum when in its operative position.

12. A machine of the character stated comprising a fillet-feeding member, a motor constantly engaged with said member to impart a feeding movement thereto, means yieldingly supporting the feeding member in a normal position and permitting its displacement therefrom by pressure on said member, motor-controlling means associated with said supporting means and acting to prevent the action of the motor when the feeding member is in its normal position, and to permit the action of the motor and the feeding movement of the feeding member thereby when the feeding member is displaced from its normal position, a supporting frame base having upright frame members between which said feeding member is exposed, and a removable cover coöperating with said base and one of said frame members to form a casing inclosing the motor.

13. A machine of the character stated comprising a fillet-feeding member, a motor constantly engaged with said member to impart a feeding movement thereto, means yieldingly supporting the feeding member in a normal position and permitting its dis-

placement therefrom by pressure on said member, motor-controlling means associated with said supporting means and acting to prevent the action of the motor when the feeding member is in its normal position, and to permit the action of the motor and the feeding movement of the feeding member thereby when the feeding member is displaced from its normal position, a supporting frame base having upright frame members between which said feeding member is exposed, and a removable cover cooperating with said base and one of said frame members to form a casing inclosing the motor, said frame member having a cover-engaging seat, and the base a cover-engaging groove.

14. A motor driven machine of the character described, comprising a base, a motor supported thereby, an upright frame member at one end of the motor, drum-supporting mechanism located at the opposite side of said frame member from the motor, a drum supported by said mechanism and geared to the motor, a cover formed to cooperate with the said base and frame member in forming a casing preventing access to the motor, and concealed fastening means securing the cover to the motor.

15. A motor driven machine of the character described, comprising a base, a motor supported thereby, an upright frame member at one end of the motor, drum-supporting mechanism located at the opposite side of said frame member from the motor, a drum supported by said mechanism and geared to the motor, a cover formed to cooperate with the said base and frame member in forming a casing preventing access to the motor, and securing pins driven into coinciding holes in the base, the frame member and the cover.

16. A motor driven machine of the character described, comprising a base, a motor supported by the base, an upright inner frame member at one end of the motor, an upright outer frame member spaced from the inner member, drum supporting mechanism located between said members, a drum supported by said mechanism and geared to the motor, a cover formed to coöperate with the said base and inner member in forming a casing preventing access to the motor, concealed fastening means securing the cover to the motor, the outer member being detachable and formed to coöperate with the base and inner member in inclosing the drum-supporting mechanism and the main portion of the drum, and means for securing the outer member to the inner member, said means being accessible only from the space under the cover.

17. A motor driven machine of the character described, comprising a base, a motor supported by the base, an upright inner frame member at one end of the motor, an upright outer frame member spaced from the inner member, drum supporting mechanism located between said members, a drum supported by said mechanism and geared to the motor, a cover formed to coöperate with the said base and inner member in forming a casing preventing access to the motor, concealed fastening means securing the cover to the motor, the outer member being detachable and formed to coöperate with the base and inner member in inclosing the drum-supporting mechanism and the main portion of the drum, screws detachably connecting the inner and outer members, said screws being accessible only from the space under the cover, and screws engaged with the base and engaging slotted ears on the outer member.

In testimony whereof I have affixed my signature, in presence of two witnesses.

ADELBERT S. JAQUITH.

Witnesses:
C. F. Brown,
P. W. Pezzetti.