

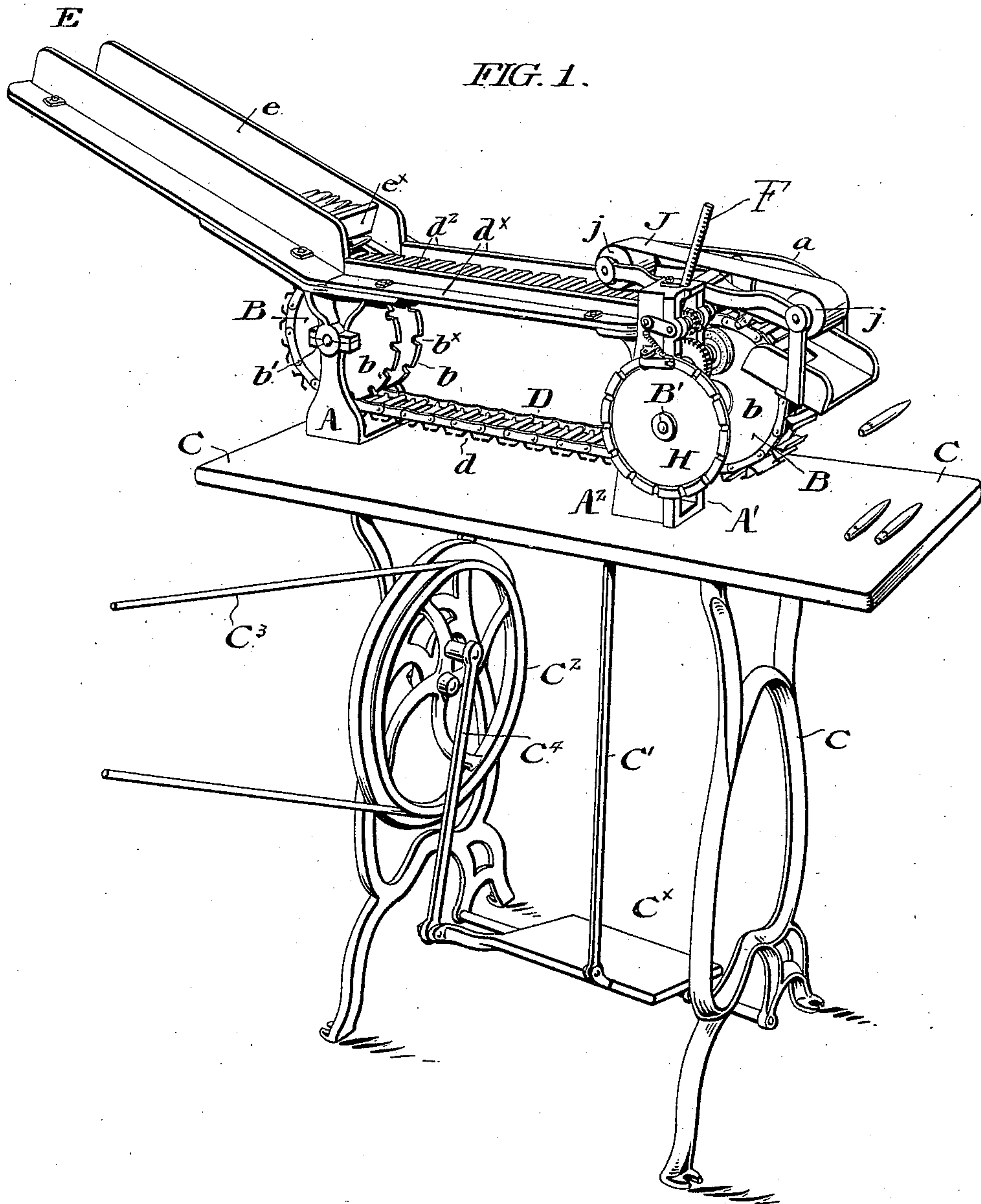
(No Model.)

5 Sheets—Sheet 1

G. W. SWIFT, Jr.
PRINTING MACHINE.

No. 602,277.

Patented Apr. 12, 1898.



WITNESSES:

A. E. Paige
J. Norman Dixon

George W. Swift Jr.

INVENTOR:

By his Attorneys,
Wm. E. Strawbridge
Bonsall Taylor

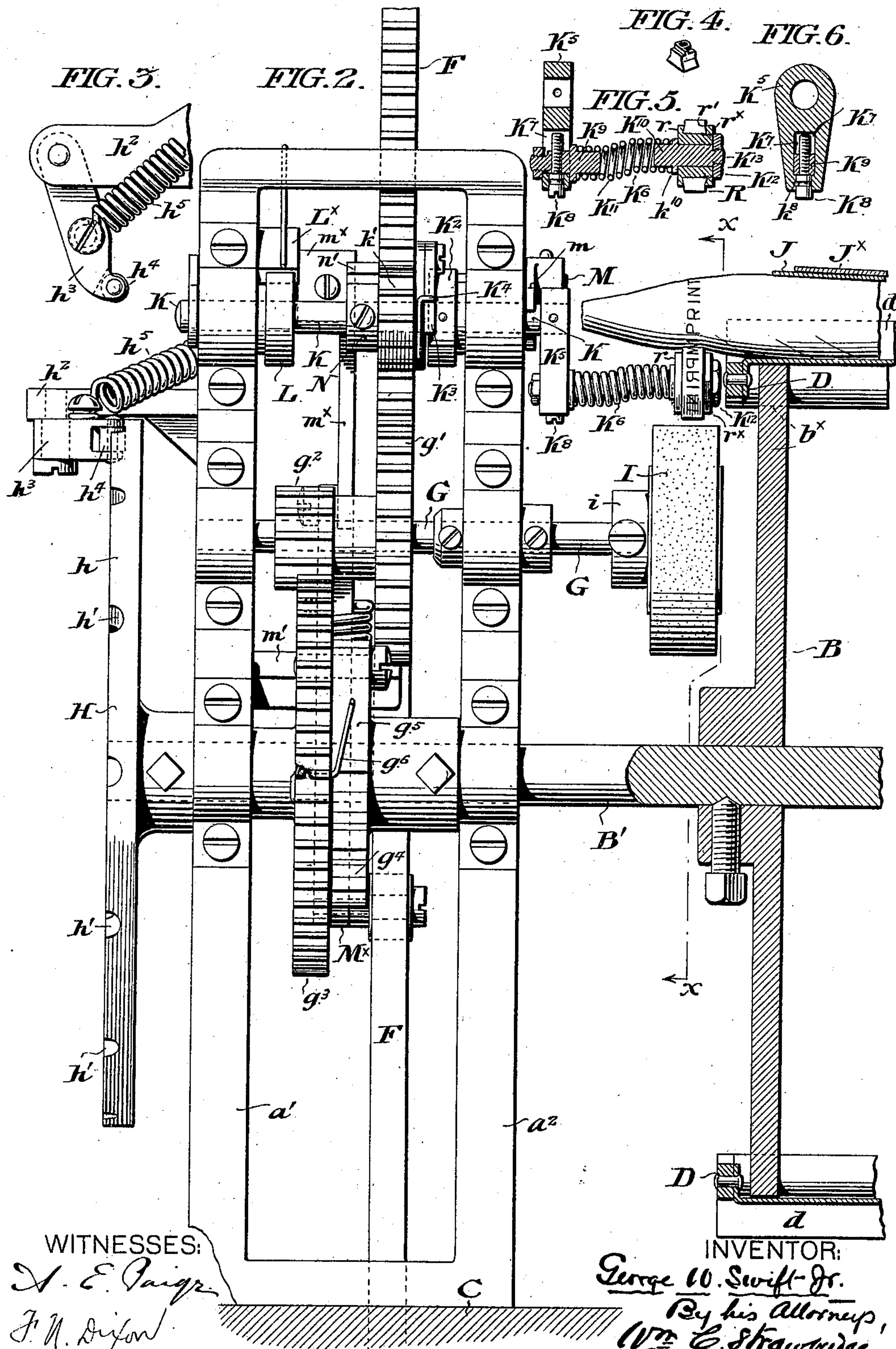
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G. W. SWIFT, Jr.
PRINTING MACHINE.

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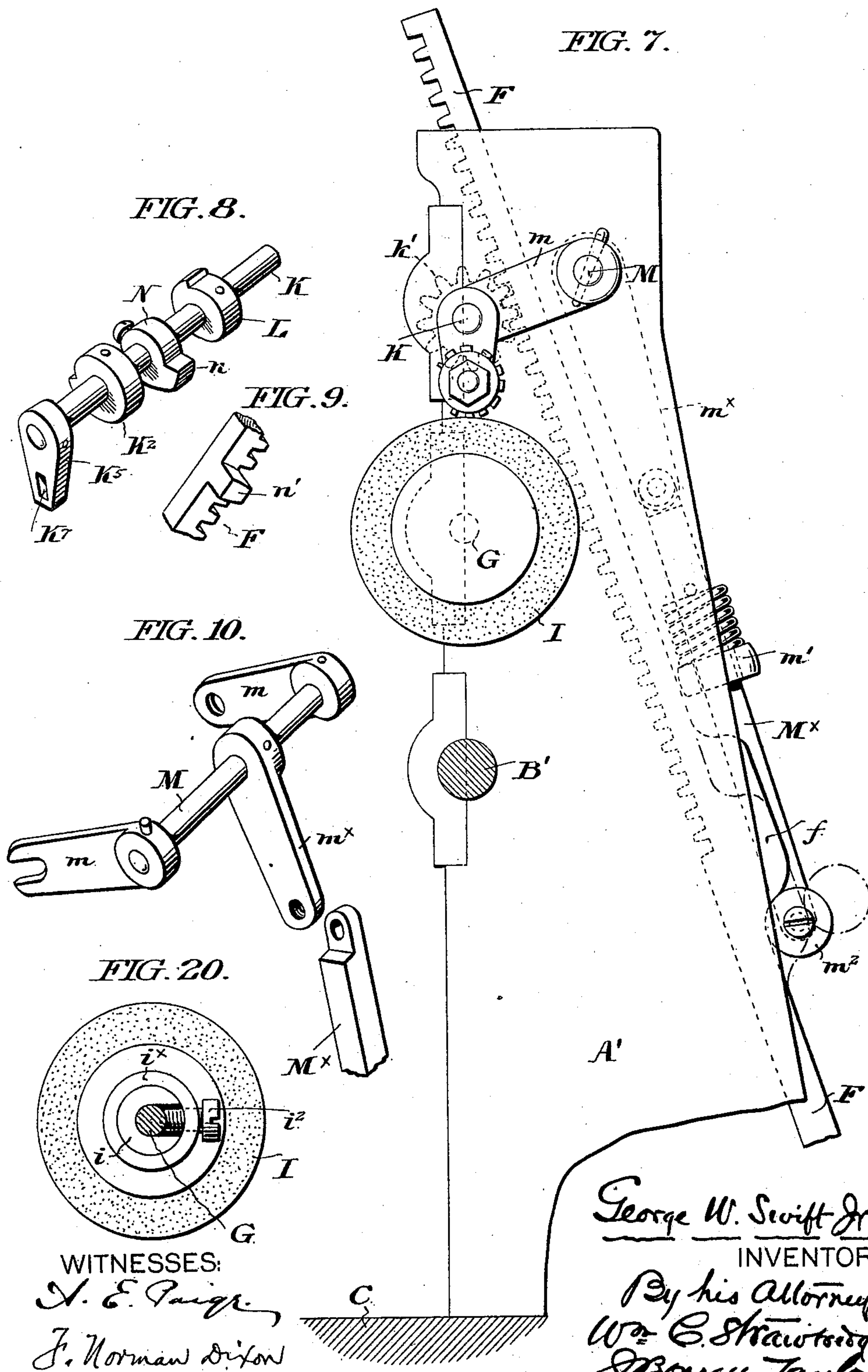
Patented Apr. 12, 1898.



5 Sheets—Sheet 3.

No. 602,277.

Patented Apr. 12, 1898.



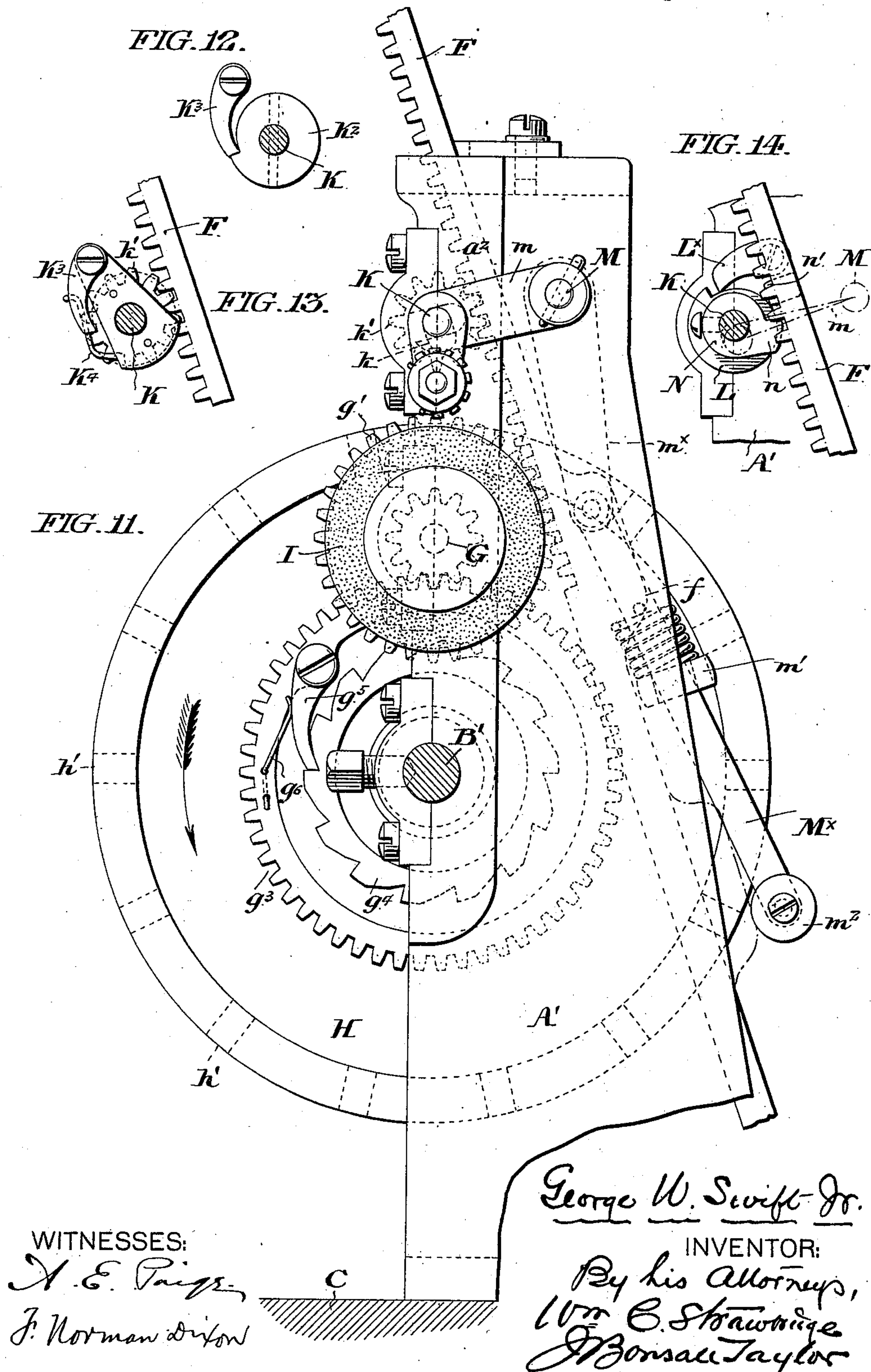
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G. W. SWIFT, Jr.
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George W. Swift Jr.
INVENTOR:
By his Attorney,
Wm. C. Strawbridge
Bonsall Taylor

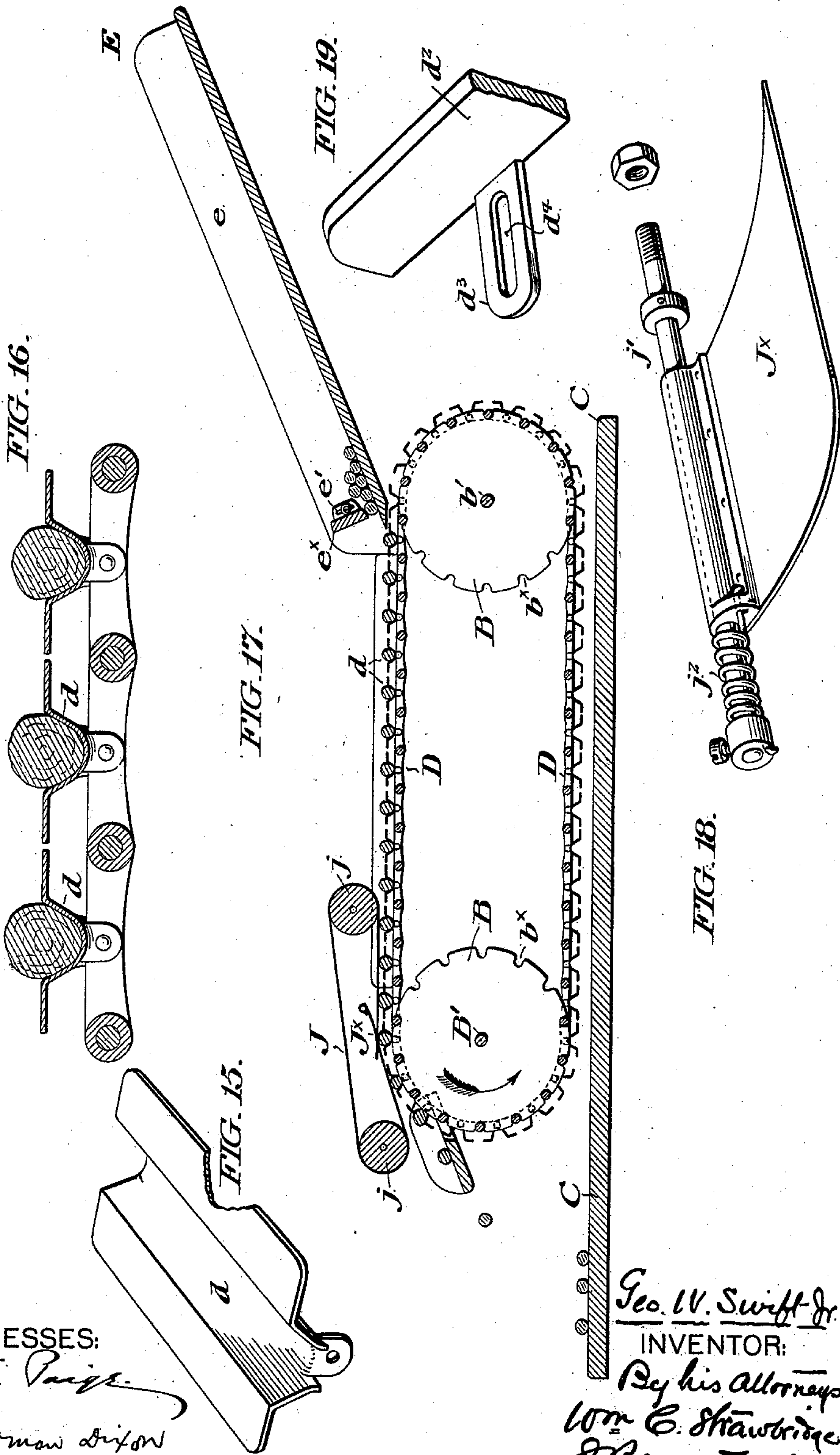
(No Model.)

5 Sheets—Sheet 5.

G. W. SWIFT, Jr.
PRINTING MACHINE.

No. 602,277.

Patented Apr. 12, 1898.



WITNESSES:
H. E. Paige
J. Norman Dixon

Geo. W. Swift Jr.
INVENTOR:
By his Attorneys
Wm. C. Strawbridge
& Benson Taylor

UNITED STATES PATENT OFFICE.

GEORGE W. SWIFT, JR., OF BORDENTOWN, NEW JERSEY.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 602,277, dated April 12, 1898.

Application filed June 4, 1897. Serial No. 639,429. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SWIFT, Jr., a citizen of the United States, residing at Bordentown, in the county of Burlington, in the State of New Jersey, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

It is a desideratum in the marketing of cigars that manufacturers should be able to place upon their products markings of such character as to identify to the purchaser the various brands of the articles, for the protection of both the purchaser and manufacturer against the substitution by the dealer of inferior cigars for those which the purchaser may require.

Heretofore, so far as I am aware, no adequate means for marking upon a cigar, or providing it with, a brand or imprint to indicate its manufacture or grade, have been provided.

It is the object of my invention to provide a printing machine adapted to plainly print directly upon the body of a cigar or other cylindrical body any desired trade-mark, symbol, or legend, and to accomplish this work quickly, inexpensively, and with accuracy.

In the accompanying drawings I show and herein I describe, a good form of a convenient embodiment of my invention, the particular subject-matter claimed as novel being hereinafter definitely specified.

Generally stated, my invention comprehends the provision of a machine equipped with a conveyer upon which the cigars are deposited and advanced through the machine, and by which they are ultimately delivered to a suitable delivery chute, said conveyer having an intermittent motion of travel so that it pauses as each successive cigar arrives in front of the printing mechanism, and also equipped with a printing mechanism of a special character, one of the principal characteristics of which is a type wheel mounted upon a flexible support or shaft, and provided with a suitable inking device, which wheel makes contact with the circumferential face of a cigar, and, upon the said devices, to-wit, the cigar and the type wheel, being rotated the one around the other, said type wheel makes an ink imprint upon the face of the cigar, which

imprint will be uniform and clear, by reason of the flexibility of the shaft of the type wheel which enables said type wheel to ride freely over any ridges, or inequalities, in the surface of the cigar instead of printing merely upon the apices of the same as would be the case were non-yielding printing devices employed.

My invention further comprehends the special devices and arrangements of mechanisms operative in aid of and in connection with the traveling conveyer and the flexibly mounted printing wheel,—all as hereinafter shown and described.

In the accompanying drawings,

Figure 1 is a view in perspective of an apparatus conveniently embodying my invention.

Figure 2 is a view in end elevation, sight being taken toward the right hand end of the apparatus shown in Figure 1,—of the parts of the apparatus mounted on the stand or table C, certain parts being shown in section and part of the conveyer wheel and supporting framework being omitted for clearness of illustration.

Figure 3 is a view in top plan of the locking arm and its supporting plates.

Figure 4 is a view in perspective of one of the movable type employed in the type wheel.

Figure 5 is a central vertical section of the crank arm, flexible shaft mounted thereon, and type wheel mounted on said flexible shaft.

Figure 6 is a view in side elevation of part of the supporting framework, illustrating the rack and certain parts immediately associated with it.

Figure 8 is a view in perspective of a crank shaft and certain parts mounted upon it.

Figure 9 is a view in perspective of a fragmentary portion of the rack.

Figure 10 is a view in perspective of the rock shaft illustrating the rock shaft and the rock shaft hanger.

Figure 11 is a side elevation partly in section on the dotted line $x-x$ of Figure 2, sight being supposed taken in the direction of the arrows applied to said line.

Figure 12 is a view in side elevation of the ratchet wheel and ratchet pawl operating in connection with the crank shaft.

Figure 13 is a view in side elevation of a portion of the rack illustrating also the idle gear wheel mounted on the crank shaft and parts associated therewith.

Figure 14 is a view in side elevation of the rack illustrating also the shaft K and the fixed collar mounted upon it.

Figure 15 is a view in perspective of one of the holders of the conveyer.

Figure 16 is a longitudinal section of a portion of the conveyer apron.

Figure 17 is a central longitudinal section of the conveyer, the holder apron, and the chute.

Figure 18 is a view in perspective of the apron presser plate, and associated parts.

Figure 19 is a view in perspective of a portion of one of the guide plates.

Figure 20 is an elevational view of the inner face of the inking disk.

Similar letters of reference indicate corresponding parts.

In the drawings,

C is a stand or table upon which the mechanism of my improvement in printing machines is mounted, the same being provided with a treadle C^x , and a treadle pitman C' connected to said treadle, by which the mechanism upon the table may be driven by the foot power of the operator.

C^2 is a band wheel mounted upon the leg or support of the table, equipped with a band C^3 , and connected to the treadle C^x by the pitman C^4 , the arrangement being such that power transmitted through the band C^3 may be employed, instead of foot power, for the driving of the machine.

A A' designate respectively the rear and front supporting frameworks erected upon the stand or table C, and which serve to support, clear of the stand, the operative devices of my improved machine.

Mounted upon the rear supporting framework A, is one of a pair of conveyer drums or wheels B, said wheel consisting of a pair of counterpart disks b , affixed upon a common shaft b' , journaled in said supporting framework, said disks having peripheral notches b^x ,—while mounted upon the front supporting framework A' is the other of said pair of conveyer wheels B, similarly composed of counterpart disks b having peripheral notches or recesses, and supported upon an axle designated the conveyer axle B' , journaled in the said framework A', and having an extension upon which are mounted a locking plate and a conveyer gear, whereof hereinafter.

D is a conveyer apron of a usual and common type, mounted and running upon the conveyer drums or wheels B, and having transverse pins which in the rotation of the wheels and travel of the apron come within the notches b^x , with the result that the said apron is caused to move with positiveness in due relation to the speed of the conveyer wheels.

d , Figures 15 and 16, are holders mounted upon the carrying face of the conveyer apron, and each preferably consisting of an open trough, conveniently formed of sheet metal, and extending transversely of the apron, as shown. Preferably the edges of each trough flare outwardly and away from each other, the flanges or lips thus formed reaching into close proximity to the corresponding edges or flanges of the adjacent holders. The length of these holders is preferably equal to the breadth of the apron but considerably less than the length of an ordinary cigar, with the result that the cigars placed in said holders project beyond the edge of the apron, so that the printing mechanism may the more conveniently operate upon the projecting end portions.

d^x are horizontal plates extending in parallelism from the rear supporting framework A to the front supporting framework A', along between which the upper division of the conveyer apron travels.

Vertical guides d^2 are erected, one upon each of these horizontal plates d^x , and spaced apart a distance equal to the length of the cigars to be printed, being conveniently adjustably mounted on said horizontal plates so as to be capable of being moved toward and away from the conveyer apron to accommodate various sizes of cigars operated upon at different times.

The vertical guides d^2 are provided with ears d^3 (see Figure 19) which present against the upper faces of the plates d^x , and embody elongated slots d^4 , through which screws extend into said plates d^x , with the result that by loosening and tightening said screws the said guides may be set at any desired position of adjustment.

E, Figures 1 and 17, is an inclined chute or run-way, mounted upon the gear ends of the plates d^x , the floor of which chute terminates just above the rear end of the upper division of the conveyer apron, so that cigars placed in said chute and descending along the same, gravitate one by one upon said conveyer apron.

e^x is a gate or bar extending across the foot of said chute, and from one of its side plates e to the other,—the lower edge of which gate is at such distance upon the floor of the chute, so as to prevent the passage of more than one cigar at a time.

As will be understood, the cigars which descend by gravity beneath said bar, are received one within each of the holders d which said conveyer carries, the lips or flanges of the holders preventing the cigars from dropping between the holders.

The gate e^x is provided with ears e' having vertical slots, (see Figure 17) through which screws pass into the side walls e of the chute, the arrangement being such that said gate is adjustable to different heights, to permit the passage beneath it of cigars or articles of any given size.

The side walls *e* of the chute are adjustable to different sets or positions, being secured to the floor of the chute through ears having elongated slots, as described in connection with the vertical guide plates *d*².

The upper end of the treadle pitman *C'* extends through the top *C* of the supporting stand, and through a suitable guide opening in the top of the supporting framework *A'* and its upper end portion is equipped on its front face with teeth, so that said upper end constitutes a rack *F*, which, the treadle being operated, serves to actuate both the conveying mechanism and the printing mechanism.

G, Figures 2, 7, 11, and 13, is a driving shaft, journaled in the supporting framework *A'*, and provided with a driven pinion *g'*, with which said rack *F* is in engagement, and with a driving pinion *g*² in engagement with a driven conveyer gear *g*³ loosely mounted on the conveyer axle *B'* upon which the conveyer wheel *B* is mounted.

*g*⁴, Figures 2 and 11, is a ratchet keyed or otherwise fixedly secured upon the shaft *B'* in adjacency to the conveyer gear *g*³,—and *g*⁵ is a ratchet pawl pivotally mounted upon that side of the conveyer gear *g*³ adjacent to said ratchet, and the free end of which is, by the wire or other spring *g*⁶, constantly forced against the face of said ratchet.

As a result of the foregoing construction and arrangement, it will be understood that when in the movement of the treadle the rack *F* ascends, the driven pinion *g'*, driving pinion *g*², and conveyer gear *g*³, will all be caused to rotate, but said rotation will be without effect upon the shaft *B'*, said rotation merely causing said conveyer gear *g*³ to carry the ratchet pawl *g*⁵ backwardly over the face of the ratchet wheel *g*⁴, so that said ratchet pawl engages with a new tooth of the ratchet wheel.

In the downward movement of the treadle pitman, however, the descent of the rack *F* which constitutes an extension thereof, will cause the reverse movement of said pinions *g'*, *g*², and conveyer gear *g*³, and will, through the ratchet pawl, *g*⁵, (see Figures 2 and 11,) occasion the movement of the ratchet-wheel *g*⁴, in unison with the conveyer gear *g*³, in the direction of the arrow shown in Figure 11, and the consequent rotation of the axle *B'* and conveyer wheel *B* mounted upon it, and the forward travel of the conveyer apron.

This movement is periodically repeated in the operation of the machine, the conveyer apron pausing or remaining idle during the period of the ascent of the treadle pitman, but being caused to move forward during the period of the descent of said pitman,—the organization and timing of the parts of the machine being such that in this intermittent travel of the apron, said apron pauses in positions in which the successive holders are presented seriatim in range of action of the printing mechanism, so that the cigars are held stationary during the printing operation.

In order to secure the shaft *B'* and consequently the conveyer and cigar holders, the more firmly in fixed position during the period of ascent of the treadle pitman, and dwell of said parts, being also the period during which the printing mechanism, as explained hereinafter, is operating upon a particular cigar,—and to prevent such movement of the conveyer or its associated parts as might result from the jar or rebound or vibration of the machine,—I resort to the employment of a locking plate *H*, mounted upon the free outer end of the conveyer shaft *B'*, as shown specially in Figures 2 and 11.

Said locking plate consists of a disk of metal, having an outwardly turned annular circumferential flange *h*, in which are formed a series of notches *h'*.

*h*², Figure 3, is a supporting plate projecting from the supporting framework *A'*, and overhanging said locking plate, on which supporting plate is pivoted a vibratory locking arm, *h*³, the inner end of which bears upon said flange *h*, and is equipped with a roller *h*⁴ which rides along the crest of said flange, said locking arm being maintained by a strong spiral spring *h*⁵ secured to it, and to the supporting framework *A'*, firmly against said flange.

The parts just described are so arranged that just as the treadle pitman ceases to descend, and the conveyer wheel *B* and the conveyer axle *B'* come to a standstill, one of the notches or recesses *h'* comes beneath the roller of the locking arm *h*³ which thereupon immediately drops into it, and operates to hold said locking plate *H* and consequently the conveyer axle or shaft *B'* and conveyer wheel in fixed position until the treadle pitman again begins to descend.

When, in the descent of the treadle pitman, the shaft *B'* is again subjected to positive rotation, the edge of the notch *h'* impinging against the roller *h*⁴ lifts said roller out of the notch and said roller thereupon again rides along the crest of the flange as the locking plate travels beneath it, until the treadle comes to the end of its stroke, at which time the next succeeding notch presents beneath the roller of the locking arm *h*³.

The driving shaft *G* is, during the operation of the machine, constantly rotated in alternate directions, and I utilize the inner end of said shaft for the support of an inking pad *I* of any preferred and usual description.

This ink pad is shown as of disk-like form, with its peripheral face covered by a strip of felt or similar material saturated with ink of any suitable character.

In order to conveniently mount the inking disk, upon the inner end of the shaft *G*, I form the face of said disk with a projecting hub *i* open as to one side, (as shown in Figure 20) and mount said disk upon said shaft by sliding said disk laterally upon the shaft end, the shaft end passing through the side opening in said projecting hub, and I thereupon

mount a holding ring, i^x , provided with a binding screw i^2 , upon the exterior of said hub in such position that said binding screw is in line with the opening in the side of the hub, and screw home said tightening screw until it encounters the shaft G, whereupon the inking disk will be held firmly in position upon said shaft.

I resort to the foregoing expedient because of the restricted space, in which, as will be seen in Figure 2, the inking disk is mounted, there being not sufficient space between the end of the shaft G and the adjacent portion of the supporting frame A to permit of the passage of the inking disk between them and of its being threaded upon the shaft in the ordinary manner.

In order to firmly hold the cigars within the above described holders during the operation of the printing mechanism, I support over the conveyer apron, in the vicinity of the printing mechanism, a holder apron J, as shown in Figures 1 and 17; this holder apron is an endless apron mounted upon a pair of idle rolls j suitably mounted in a suitable bracket a of the framework A' , said idle rolls being situated one to the rear and the other in advance of the printing mechanism, and being in such position as to maintain the holder apron down upon the faces of the cigars, as the same are carried beneath it by the conveyer apron.

I pivotally support between the upper and lower divisions of the holder apron, J, a spring plate J^x (see Figures 17 and 18) which is maintained in such position in relation to the printing mechanism as to bear down, through the lower division of the holder apron, upon each cigar as it comes in line, and pauses in registry with, the printing mechanism.

The spring plate is conveniently formed as a slightly curved plate of metal, the lower portion of which, as to its free end, bears against the holder apron, and through it against the cigars in succession as stated, and the upper end of which is pivotally secured upon a fixed bar j' mounted in the framework a .

I force said plate down upon the cigars by spring pressure, conveniently produced by a spiral spring j^2 mounted on the bar j' and having one end secured to said plate and the other end secured to said bar.

The printing mechanism is as follows:

K, (Figures 2, 7, 8, 11, and 14,) is a crank shaft mounted in elongated slots k (see Figure 11), of the members a' a^2 of the supporting framework A' , (see Figure 2) which slots extend in an arc concentric with the shaft M, and which shaft K carries a driven gear wheel k' loosely mounted upon it, and constantly in mesh with said rack F.

K^2 is a ratchet wheel, fixedly mounted upon said shaft K in proximity to said gear wheel k' , and K^3 is a ratchet pawl mounted on the side of said gear k' and pressed by a spring

K^4 constantly against the face of said ratchet wheel.

The inner end of the shaft K is provided with a crank arm K^5 (see Figures 4 and 6) on the outer end of which is mounted a flexible shaft K^6 , the free extremity of which is equipped with a printing wheel R.

L is a stop wheel mounted on said shaft K, and L^x is a stop pawl pivotally secured to the framework at a point above said stop wheel, and having its free end resting upon said wheel.

Manifestly, when motion of reciprocation is imparted to the treadle, and consequently to the rack F, rotation, alternately in opposite directions, will be imparted to said gear wheel k' .

In the descent of said rack, said gear wheel k' will rotate idly upon said shaft K, said shaft being prevented from rotating with it by the engagement of the stop pawl L^x with the stop wheel L; but said wheel k' will, in its rotation, of course, carry the ratchet pawl secured to it rearwardly over the ratchet wheel so that said ratchet pawl will engage with a new tooth of the ratchet wheel.

When then, the rack comes to the end of its descent, and begins to ascend, said gear wheel k' will be rotated in the opposite direction, and will, through the engagement of its ratchet pawl K^3 with the ratchet wheel K^2 , which is fast upon the shaft, occasion the rotation of said shaft K, and consequently the rotation of the crank arm K^5 , carrying, as described, the flexible shaft upon which is mounted the printing wheel R.

The timing set of the parts is such that the rotation imparted to said shaft K, in the ascent of the rack F, will be sufficient to cause the crank arm K^5 , flexible shaft, and the printing wheel R to describe one complete revolution.

The arrangement of the parts described is, as explained, such that the cigars carried by the conveyer apron come to rest one by one in line with the shaft or axle K with their ends projecting beyond the edge of the apron and within the area of the circle described by the printing wheel R in its revolution just described,—and the flexible shaft carrying the printing wheel is so set as to cause said wheel to describe a circle the diameter of which is a trifle less than the diameter of the cigar at the point at which the imprint is to be made upon it, with the result that the printing wheel bears slightly upon projecting portions of the cigar and follows its surface down within any large depressions present therein.

The printing wheel is loosely mounted upon the flexible shaft so that it has revolution of its own upon said shaft, and the frictional contact between the printing face of the printing wheel and the face of the cigar is sufficiently great to cause the revolution of said printing wheel R upon its axis in its circumvolution about the cigar, with the result, the diameter of the printing wheel being approxi-

mately equal to the diameter of the cigar at the point printed upon, that every portion of the printing surface of the printing wheel is in said circumvolution presented against the face of the cigar.

The timing of the parts is such that the shaft K always completes its revolution with the crank arm K⁵ in the depending position shown in Figure 2 of the drawings.

The shaft K has two positions which it alternately occupies, one of said positions being at the upper end of the slots *k*, as shown in Figure 11, and the other at the lower end of said slots *k*.

It is in the uppermost of these positions when it is revolved to carry the printing wheel about the periphery or circumference of the cigar.

When it is not thus occupied it is dropped to its lowermost position to carry the printing wheel into contact with the constantly rotating inking disk I which is situated just beneath the printing wheel R, as shown in Figure 2.

Manifestly, when the printing wheel R is in contact with the inking disk I, the frictional contact of the disk with the printing wheel causes the revolution of the latter upon its shaft and thus thoroughly inks the face of the type of said printing wheel.

In both its upper and its lower positions the wheel K' is in mesh with the reciprocating rack F.

I provide for carrying the shaft K with its stop wheel, its gear, its ratchet wheel and ratchet pawl, its crank arm, flexible shaft, and printing wheel, alternately into the upper and lower positions by the following devices.

M, Figures 7, 10, and 13, is a rock shaft journaled in parallelism with the shaft K and just back of it in the framework of the machine, said shaft M having a pair of arms *m* which project forwardly across the faces of the slots *k*, and said arms are provided with circular bearings through which the shaft K extends.

Said rock shaft is provided (see Figures 7 and 10), with a depending rock arm *m*^x to the lower end of which is pivotally connected a depending link M^x the intermediate portion of which passes through an opening formed in a bracket *m*' projecting from the framework.

The lower end of the depending link M^x is provided with a roller *m*² which bears against the rear face of the rack F.

The rear face of the rack F is provided with a cam *f* as shown in Figures 7 and 13, and as the treadle pitman and rack reach the lower end of their stroke, said cam is carried against the roller of the depending link M^x and, throwing the lower end of said link outward, forces the upper end of said link inward and consequently forces inward the depending rock arm *m*^x secured to the rock shaft, thus tilting or rocking the rock shaft and causing

the arms *m* to swing upward and carry the shaft K to the upper ends of the slots *k*.

A spiral spring coiled about the central portion of the depending link M^x and confined between the bracket *m*' and a suitable stop on said link, tends, when the link is by the cam on the rack tilted inward with respect to its bearing in the bracket, to bind and maintain said link in its tilted position in which it holds the shaft K in its uppermost position.

N, Figure 8, is a collar fixedly mounted upon the shaft K and provided with a projecting tooth *n*, and *n*', Figure 9, is a projecting tooth mounted upon the rack F and adapted to encounter said tooth *n*.

This collar with its tooth *n* acts in co-operation with the tooth *n*' on the rack to cause the descent of the shaft K, at the proper times, to its lower position.

In the ascent of the rack, the shaft K, and all the parts mounted upon it rotate, the period of the ascent of the rack being the period during which the printing wheel is traveling about the cigar and printing upon it.

When the rack begins to descend, it is desired to carry the shaft K to its lowermost position to cause the printing wheel R to make contact with the inking disk I,—and the collar N is mounted in such position on the shaft K, and the tooth *n*' is mounted in such position on the rack F, that said tooth on the rack is, at the beginning of the descent of the rack, immediately over the tooth *n* on said collar N, and consequently as soon as said rack begins to descend its tooth encounters the tooth on the collar and bears against it.

The shaft K being held, as explained, against reverse rotation by the stop plate and stop, the pressure caused by the rack against the tooth *n* and the collar N which is fast on the shaft, instead of causing the rotation of said shaft, as it would do if said shaft was free to rotate backward, merely causes the depression of said shaft, carrying it down to its lowermost position, at the bottom of the slots *k*.

The proportion of the teeth *n* and *n*' are such that as soon as the shaft K reaches its lowermost position, as it does almost immediately, its tooth is no longer in range of the tooth of the rack, which, in the continued descent of the rack, travels away from it.

In this movement of the shaft K at the beginning of the descent of the rack the depending rock arm *m*^x is thrown outward tilting the link M^x, so that its roller comes into contact again with the rear face of the rack, to be encountered by the cam *f* just as the rack reaches its lowest position.

As will be understood, the printing wheel is maintained out of contact with the cigar during the time the latter is being brought to the position in which it is held during the printing operation,—and said wheel, after the cigar is secured in position, moves radially toward and into contact with the cigar and then begins its revolution about the latter,—

the result being that a very clear and distinct imprint is made upon the cigar, there being no such opportunity for the making of a blurred imprint as would be incident to rubbing the cigar against the type wheel in bringing the former into position to be printed upon.

The crank arm K^5 is provided, (see Figures 5 and 6), at its outer end with a radial elongated slot K^7 in which the inner end of the flexible shaft K^6 is entered, and along which it has movement of adjustment to regulate the size of the circle described by the printing wheel in the operation of the machine.

Conveniently this adjustment of the flexible shaft in said slot K^7 is effected by a regulating screw K^8 entered through the ends of the crank arm and extending through and threaded with respect to said flexible shaft, the outer end portion of said screw K^8 being swiveled in the end of the crank arm so that it is held against longitudinal movement.

Rotation imparted by means of a screw driver or similar instrumentality to the head of said screw K^8 will manifestly according to the direction of said rotation carry the flexible shaft toward the inner or outer end of the crank arm.

The flexible shaft K^6 is composed of two shaft sections designated K^9 K^{10} respectively maintained in approximate alinement with each other but at some distance apart by a spiral spring K^{11} which fits upon and is soldered to the opposing ends of said sections K^9 K^{10} .

As a result of this construction, the shaft composite of said sections and the connective spring has a very considerable degree of flexibility.

The outer extremity of the section K^{10} is provided with a shoulder k^{10} , and upon this portion of the section K^{10} and between said shoulder and a nut K^{12} secured to the end of the section by a screw K^{13} is mounted free for rotative movement the type wheel R.

Said type wheel R is formed with a circumferentially undercut ridge r at the inner end of the wheel and is provided with an annulus r^x threaded upon the outer end of said wheel said annulus having a radial projection r' opposing the ridge r and similarly undercut as shown particularly in Figure 5.

The removable type which I prefer to employ in connection with the printing wheel have enlarged bases which fit beneath the undercut portions described and are thereby very firmly held between the ridge r and the annulus r^x , one of said type being shown in perspective in Figure 4.

The inner end portion of the flexible shaft has a shoulder which bears against the exterior face of the crank arm and a reduced threaded extremity which protrudes beyond the inner face of the crank arm and is equipped with a nut as shown in Figure 5.

Having thus described my invention, I

claim and desire to secure by Letters Patent—

1. In an apparatus for printing upon the surface of cigars or other cylindrical bodies, a holder for the device to be printed, a flexibly supported printing wheel, and means for revolving the one about the other,—said printing wheel being caused to rotate idly by its contact with the device to be printed upon, substantially as set forth.

2. In a machine for printing upon the surface of cigars or other cylindrical bodies, the following instrumentalities in combination, namely:—a holder for the device to be printed, a printing wheel, means for supplying ink to the same, a flexible carrier for said printing wheel, and means for occasioning the revolution of said printing wheel about said device to be printed,—said printing wheel being mounted in such manner as to be idly rotated by its contact with said device to be printed upon substantially as set forth.

3. In an apparatus for printing upon the surface of cigars or other cylindrical bodies, a holding device for the article to be printed, a printing wheel mounted free for revolution upon an axle device, in such position as to be brought into contact as to its periphery with the article to be printed, means for causing one of said devices to travel around the other, and means for carrying said printing wheel at intervals bodily away from the device, substantially as set forth.

4. In an apparatus for printing upon the surface of cigars or other cylindrical bodies, a holding device for the article to be printed, an idly supported printing wheel mounted free for revolution upon a flexible axle device, in such position as to be brought into contact as to its periphery with the article to be printed, means for causing one of said devices to travel about the other, so that the frictional contact of the printing wheel with the article to be printed occasions the rotation of the printing wheel upon its axle device, and means for supplying ink to said printing wheel, substantially as set forth.

5. In an apparatus for printing upon the surface of cigars or other cylindrical bodies, a holding device for the article to be printed, a printing wheel mounted free for revolution upon a flexible axle device, in such position as to be brought into contact as to its periphery with the article to be printed, and to be rotated by its contact with the article to be printed, means for causing one of said devices to travel about the other, an inking pad, and means for carrying said inking pad and printing wheel into contact, substantially as set forth.

6. In a machine for printing upon cigars or similar cylindrical bodies, in combination, a conveyer, means for imparting intermittent movement to said conveyer, a printing wheel, a flexible shaft upon which said printing wheel is mounted free for rotation, and means for

causing periodic revolutions of said flexible shaft,—substantially as set forth.

7. In a machine for printing upon cigars or other cylindrical bodies, in combination, a conveyer for the articles to be printed, means for occasioning the intermittent travel of said conveyer, a printing wheel, and means for causing said printing wheel to circumvolve in turn each of the bodies presented to it by the conveyer,—substantially as set forth.

8. In combination, in a machine for printing upon cigars or other cylindrical bodies, a conveyer, holders mounted upon said conveyer and adapted to contain each one of the bodies to be printed, an idle holder apron supported above said conveyer, and a plate which bears through said holder apron upon the articles as they pass beneath it, a printing wheel and means for causing said printing wheel to circumvolve each of said bodies in succession as said bodies come beneath the plate,—substantially as set forth.

9. In a machine for printing upon cigars and similar cylindrical bodies, in combination, a conveyer, means for occasioning the intermittent travel of said conveyer, a rotatable crank shaft into the vicinity of which the devices to be printed are successively carried, a crank arm mounted on said shaft, a flexible shaft mounted on said crank arm, a printing wheel mounted upon said flexible shaft, and driving mechanism in gear with said first mentioned shaft to occasion its intermittent revolution,—substantially as set forth.

10. In a machine for printing upon cigars and similar cylindrical bodies, in combination, a conveyer, means for occasioning the intermittent travel of said conveyer, a rotatable crank shaft into the vicinity of which the devices to be printed are successively carried, a crank arm mounted on said shaft, a flexible shaft mounted on said crank arm, a printing wheel mounted upon said flexible shaft, a driving mechanism in gear with said first mentioned shaft to occasion its intermittent revolution, and means for placing said printing wheel in contact with an inking device during the periods when said crank shaft is not revolving,—substantially as set forth.

11. In a machine for printing upon cigars and similar cylindrical bodies, in combination, a conveyer, means for occasioning the intermittent travel of said conveyer, a rotatable crank shaft into the vicinity of which the devices to be printed are successively carried, a crank arm mounted on said shaft, a flexible shaft mounted on said crank arm, a printing wheel mounted upon said flexible shaft, a driving mechanism in gear with said mentioned shaft to occasion its intermittent revolution, a constantly rotating inking disk, and means for automatically lowering said shaft first mentioned during the periods of its non-revolution to carry the printing wheel into contact with said ink disk,—substantially as set forth.

12. In a machine for printing upon cigars and other cylindrical bodies, in combination, a conveyer embodying a series of holders for the articles to be printed, a printing wheel, mechanism to operate said printing wheel to cause it to circumvolve successively the articles carried by the conveyer, mechanism for causing the travel of the conveyer, a reciprocating driving rack in gear with the printing wheel operating mechanism, and the conveyer mechanism, the arrangement being such that the printing wheel mechanism is inactive while the conveyer operating mechanism is in operation, and the conveyer operating mechanism is inactive when the printing wheel operating mechanism is in operation,—substantially as set forth.

13. In a machine for printing cigars and other cylindrical bodies in combination, a conveyer, a printing wheel, mechanism for causing said printing wheel to circumvolve said cigars in succession, an operating rack which operates both mechanisms, and means for throwing said mechanisms, alternately into and out of operation, so that the printing mechanism is active when the conveyer mechanism is inactive and the conveyer mechanism is active when the printing mechanism is inactive,—substantially as set forth.

14. In a machine for printing upon cigars and other cylindrical bodies, in combination, a conveyer provided with a series of holders, a pair of conveyer wheels upon which said conveyer is mounted, means for causing the intermittent travel of said conveyer, a printing wheel, means for causing said printing wheel to successively circumvolve the cigars as the same are successively presented to it by the conveyer, a locking plate mounted upon the shaft of one of the conveyer wheels, said locking plate embodying a series of peripheral notches, a locking device which operates against said locking plate and is adapted to enter one of said recesses each time the conveyer pauses in its travel,—substantially as set forth.

15. In a machine for printing upon cigars and other cylindrical bodies, in combination, a conveyer, means for occasioning the intermittent travel of said conveyer, receiving devices with which said conveyer is equipped to receive the bodies to be printed, a crank shaft mounted in said machine and adapted to have a rotatory movement and also an up and down movement, a rock shaft provided with projecting arms, in which arms said crank shaft is journaled, a crank arm mounted on said crank shaft, a flexible shaft mounted on said crank arm, a printing wheel mounted on the extremity of said flexible shaft, an inking disk, means for causing the rotation of said crank shaft when in its uppermost position, means for automatically tilting said rock shaft to occasion the elevation of said first mentioned shaft to its uppermost position,—substantially as set forth.

16. In a machine for printing upon cigars

and other cylindrical bodies, in combination, a conveyer, means for occasioning the intermittent travel of said conveyer, receiving devices with which said conveyer is equipped, to receive the bodies to be printed, a crank shaft mounted in said machine and adapted to have a rotary movement and also an up and down movement, a rock shaft provided with projecting arms in which arms said crank shaft is journaled, a crank arm mounted on said crank shaft, a flexible shaft mounted on said crank arm, a printing wheel mounted on the extremity of said flexible shaft, means for causing the rotation of said crank shaft when in its uppermost position, means for automatically tilting said rock shaft to occasion the elevation of said first mentioned shaft to its uppermost position,—a constantly rotating inking disk, and means for automatically occasioning the lowering of said crank shaft at regular intervals to carry the printing wheel into contact with said inking disk,—substantially as set forth.

17. In a machine for printing upon cigars and other cylindrical bodies, in combination, a conveyer, means for occasioning the intermittent travel of said conveyer, a crank shaft mounted in the framework of the machine and adapted to have both a rotatory and an up-and-down movement, a crank arm mounted on the said shaft, a flexible shaft mounted on said crank arm, a printing wheel mounted on said flexible shaft, an inking disk with which said printing wheel is in contact when the crank shaft is in its lowermost position, and means for automatically causing said crank shaft to alternately occupy its upper and its lower position,—substantially as set forth.

18. In a machine for printing upon cigars and other cylindrical bodies, in combination, a conveyer, means for occasioning the intermittent travel of said conveyer, a crank shaft mounted in the framework of the machine and adapted to have both a rotatory and an up-and-down movement, a crank arm mounted on the said shaft, a flexible shaft mounted on said crank arm, a printing wheel mounted on said flexible shaft, an inking disk with which said printing wheel is in contact when the crank shaft is in its lowermost position, means for automatically causing said first mentioned shaft to alternately occupy its upper and its lower position, means for occasioning the positive rotation of said crank shaft when in its uppermost position,—substantially as set forth.

19. In a machine for printing upon cigars and other cylindrical bodies, in combination, a conveyer, means for occasioning the intermittent travel of said conveyer, a crank shaft mounted in the framework of the machine and adapted to have both a rotatory and an up-and-down movement, a crank arm mounted on the said shaft, a flexible shaft mounted on said crank arm, a printing wheel mounted on said flexible shaft, an inking disk with which said printing wheel is in contact when the

crank shaft is in its lowermost position, means for automatically causing said crank shaft to alternately occupy its upper and its lower positions, a gear wheel loosely mounted upon said shaft, a reciprocating rack in mesh with said wheel, and means for locking said wheel to said shaft during the period of the ascent of the rack,—substantially as set forth.

20. In a cigar printing machine, in combination, a crank shaft, a crank on said shaft, a flexible shaft on said crank, a printing wheel on said flexible shaft, a gear wheel loosely mounted on said crank shaft, a pawl carried by said gear wheel, a ratchet wheel fast on the shaft, a stop plate on said shaft, a pawl adapted to engage said stop plate, and a rack engaged with said tooth gear wheel,—substantially as set forth.

21. In a cigar printing machine, in combination, a shaft, a crank on said shaft, a flexible shaft on said crank, a printing wheel on said flexible shaft, a gear wheel loosely mounted on said crank shaft, a pawl carried by said gear wheel, a ratchet wheel fast on the shaft, a stop plate on said shaft, a pawl adapted to engage said stop plate, and a rack engaged with said toothed gear wheel, a collar fast on said shaft and provided with a tooth, a long tooth on said rack adapted to engage with the tooth on said collar,—substantially as set forth.

22. In a cigar printing machine, in combination, a shaft, a crank on said shaft, a flexible shaft on said crank, a printing wheel on said flexible shaft, a gear wheel loosely mounted on said crank shaft, a pawl carried by said gear wheel, a ratchet wheel fast on the shaft, a stop plate on said shaft, a pawl adapted to engage said stop plate, and a rack engaged with said toothed gear wheel, a collar fast on said shaft and provided with a tooth, a long tooth on said rack adapted to engage with the tooth on said collar, elongated slots in the frame of the machine in which said shaft is journaled, a rock shaft having arms with cylindrical bearings in which said shaft is journaled, a rock arm attached to said rock shaft, a pivoted link connected to said rock arm, the lower end of which bears against the lower face of the rack, and a cam face on said rack,—substantially as set forth.

23. In a cigar printing machine, in combination, a shaft, a crank on said shaft, a flexible shaft on said crank, a printing wheel on said flexible shaft, a gear wheel loosely mounted on said shaft, a pawl carried by said gear wheel, a ratchet wheel fast on the shaft, a stop plate on said shaft, a pawl adapted to engage said stop plate, and a rack engaged with said toothed gear wheel, a collar fast on said shaft and provided with a tooth, a long tooth on said rack adapted to engage with the tooth on said collar, elongated slots in the frame of the machine in which said shaft is journaled, a rock shaft having arms with cylindrical bearings in which said shaft is journaled, a rock arm attached to said rock shaft

a pivoted link connected to said rock arm, the lower end of which bears against the lower face of the rack, a cam face on said rack, a bracket through which the central portion of said pivot link extends, a stop mounted on said pivot link, and a spiral spring confined between said bracket and said stop,—substantially as set forth.

24. In a cigar printing machine, in combination, a holder for a cigar, a shaft, a crank arm mounted on said shaft, a flexible shaft connected to said crank arm, and a printing wheel mounted on said flexible shaft, substantially as set forth.

25. In a machine for printing cigars, in combination, a cigar holder, a shaft, a crank arm mounted on said shaft, a flexible shaft adjustably mounted in said crank arm, and a printing wheel mounted on said flexible shaft, substantially as set forth.

26. In a machine for printing cigars, in com-

bination, a holder for cigars, a shaft, a crank arm mounted on said shaft, a flexible shaft mounted on said crank arm, and consisting of two independent parts supported in axial relationship by a spiral spring connected to both, and a printing wheel mounted on said flexible shaft, substantially as set forth.

27. In a cigar printing machine, in combination, a holder for a cigar, a shaft adapted for both rotatory and up-and-down movement, a crank arm mounted on said shaft, a flexible shaft connected to said crank arm, and a printing wheel mounted on said flexible shaft, substantially as set forth.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 27th day of May, A. D. 1897.

GEORGE W. SWIFT, JR.

In presence of—

J. BONSALE TAYLOR,
F. NORMAN DIXON.