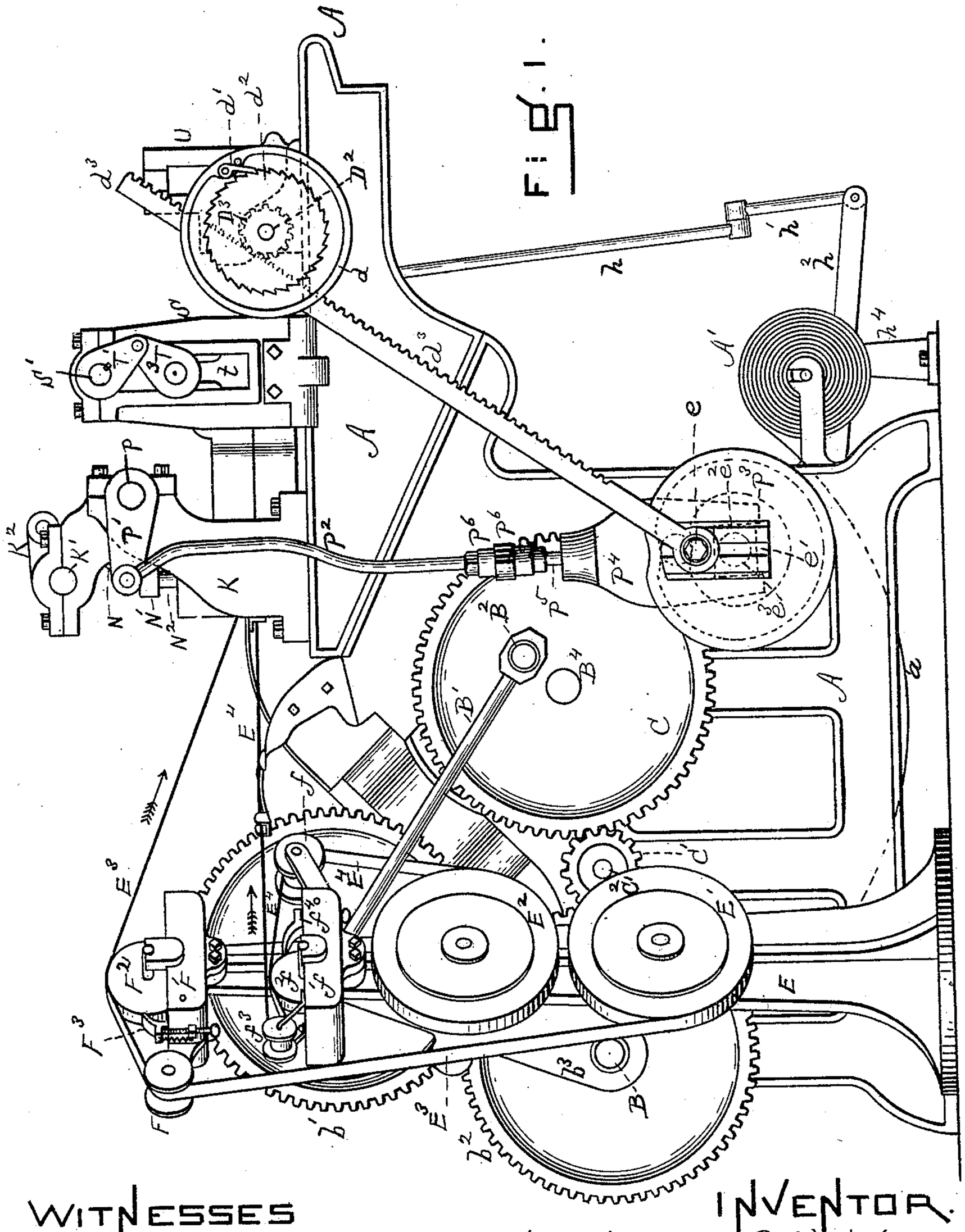
(No Model.) 6 Sheets—Sheet 1.

W. P. KIDDER.

MACHINE FOR MAKING AND PRINTING TAGS.

No. 452,076. Patented May 12, 1891.

Fig. 1.



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(No Model.)

6 Sheets—Sheet 2.

W. P. KIDDER.

MACHINE FOR MAKING AND PRINTING TAGS.

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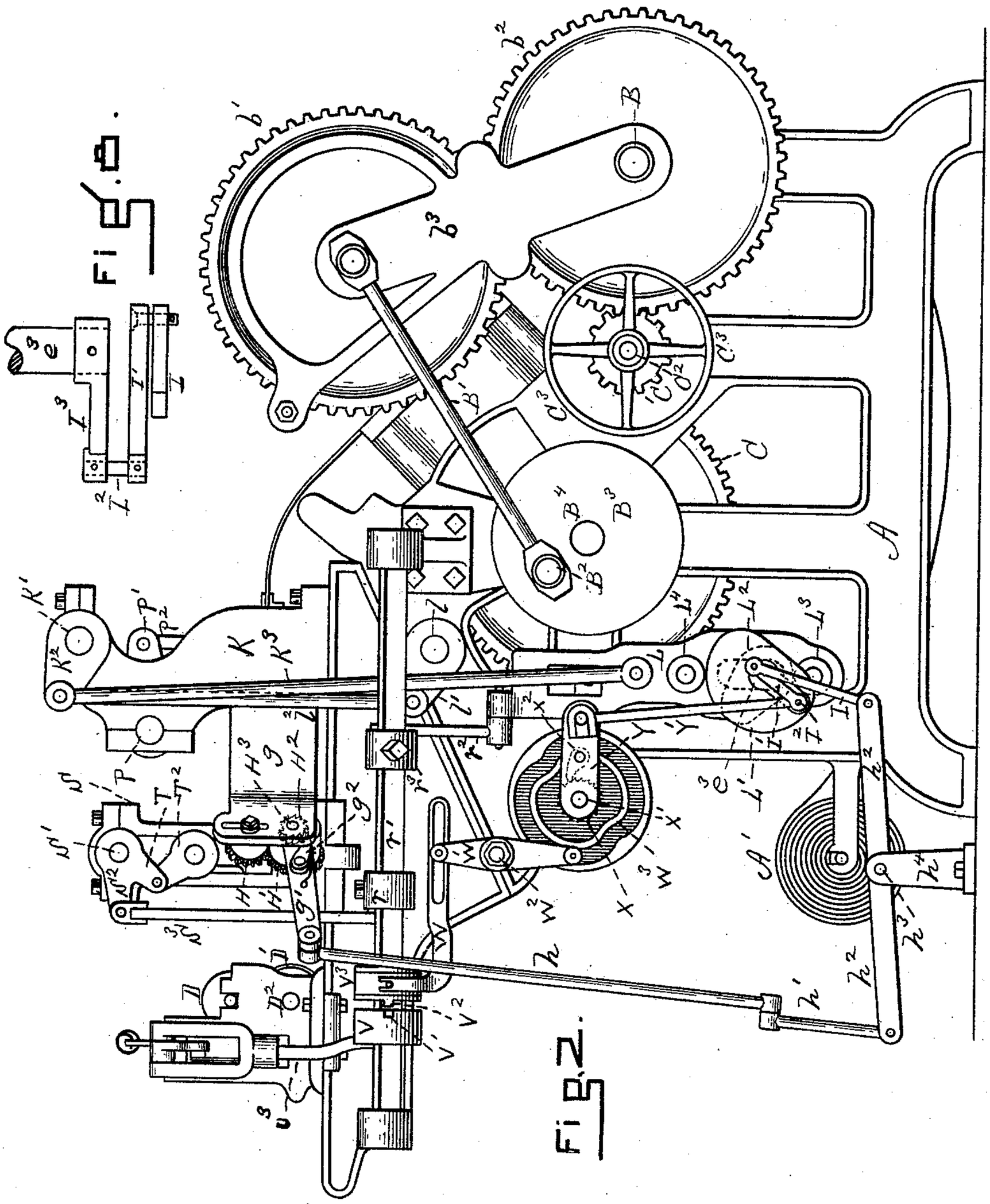
Fig. 2.



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MACHINE FOR MAKING AND PRINTING TAGS.

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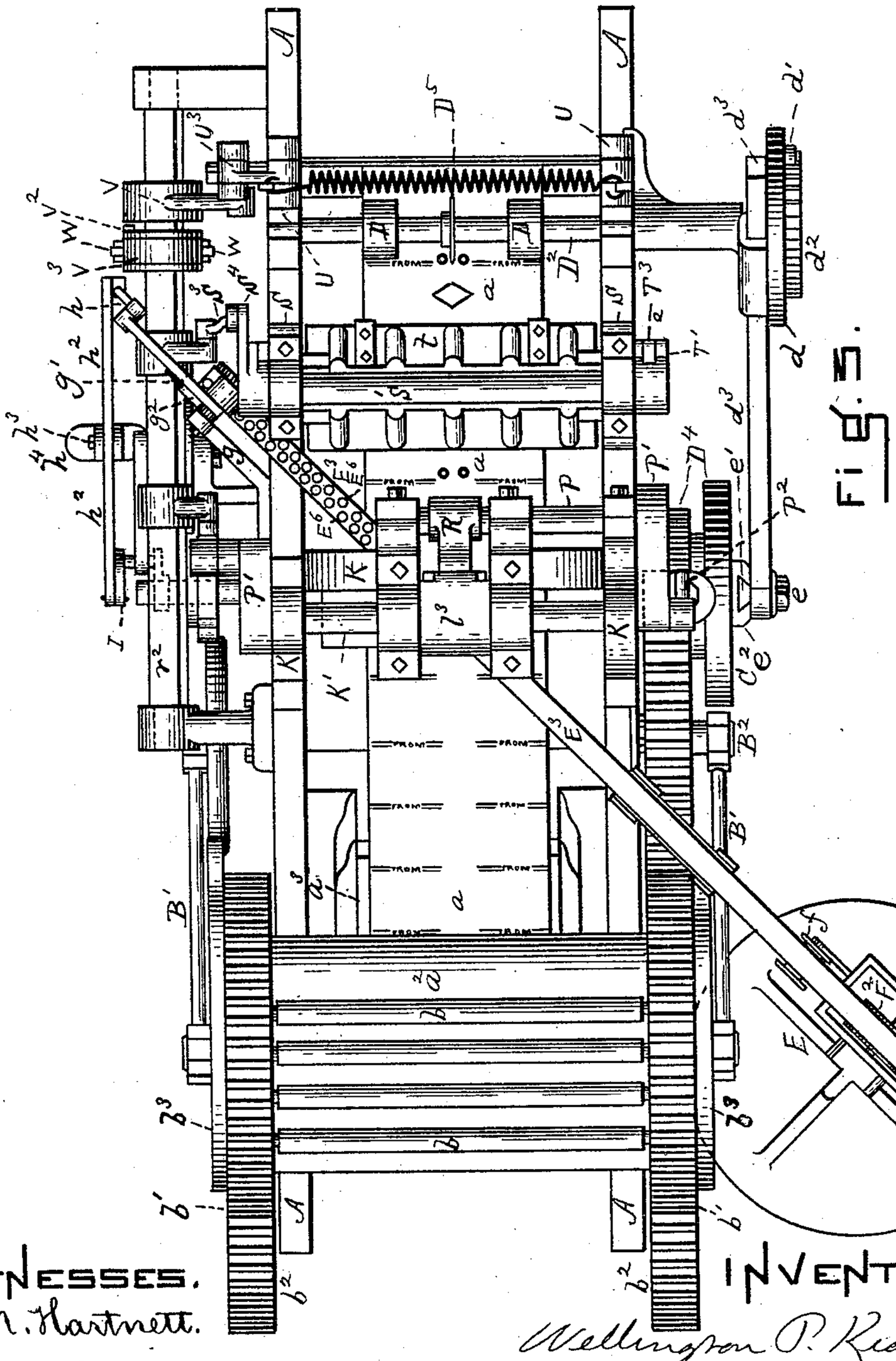

Fig. 5.

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MACHINE FOR MAKING AND PRINTING TAGS.

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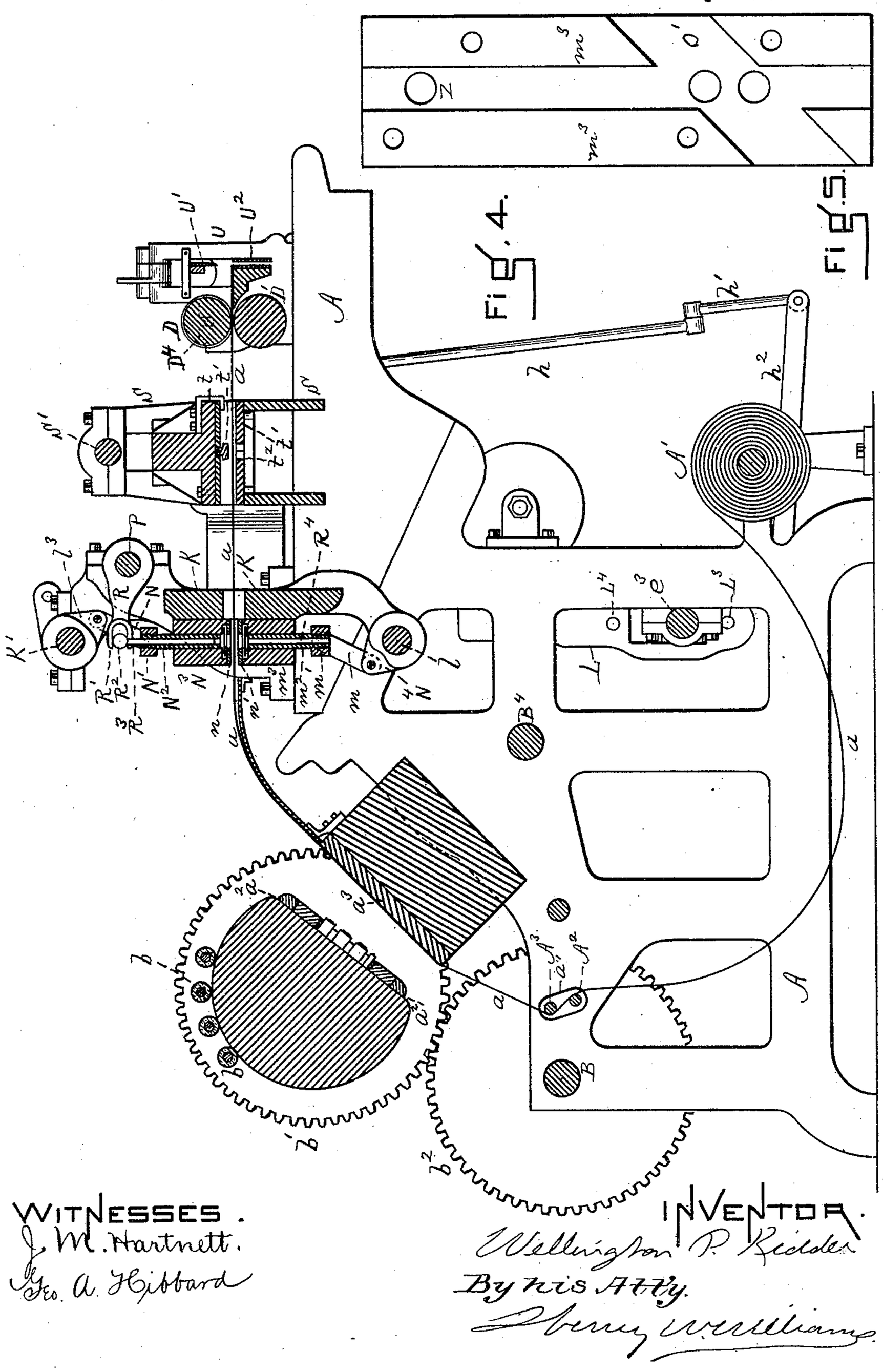

Fig. 4.

Fig. 5.

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MACHINE FOR MAKING AND PRINTING TAGS.

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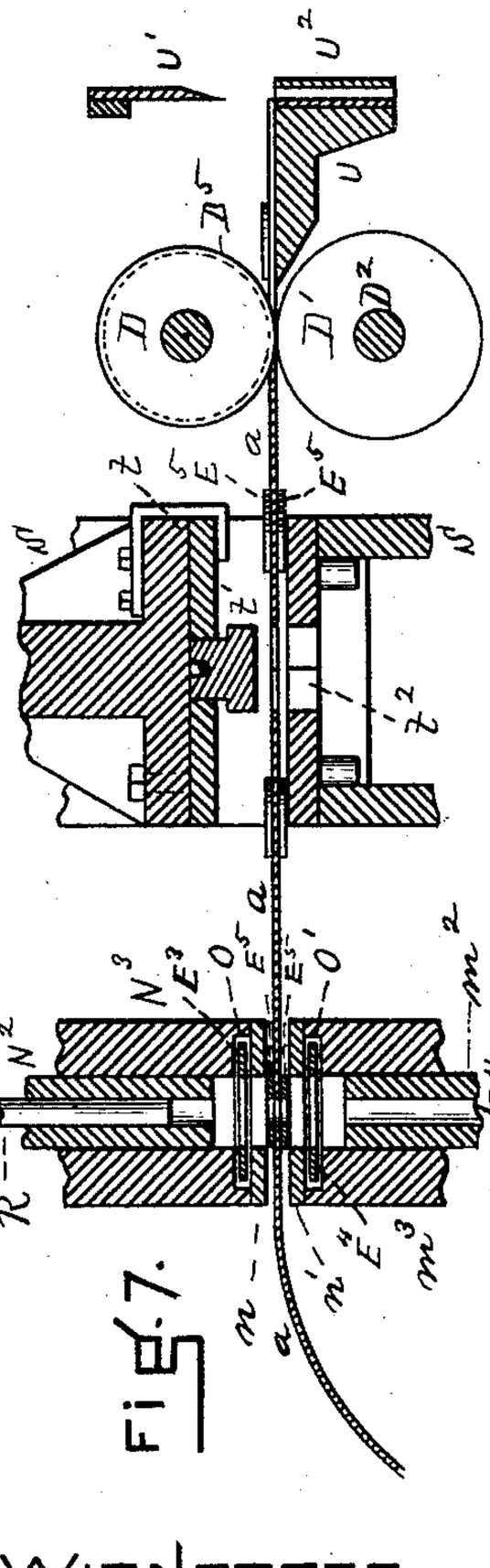

Fig. 7.

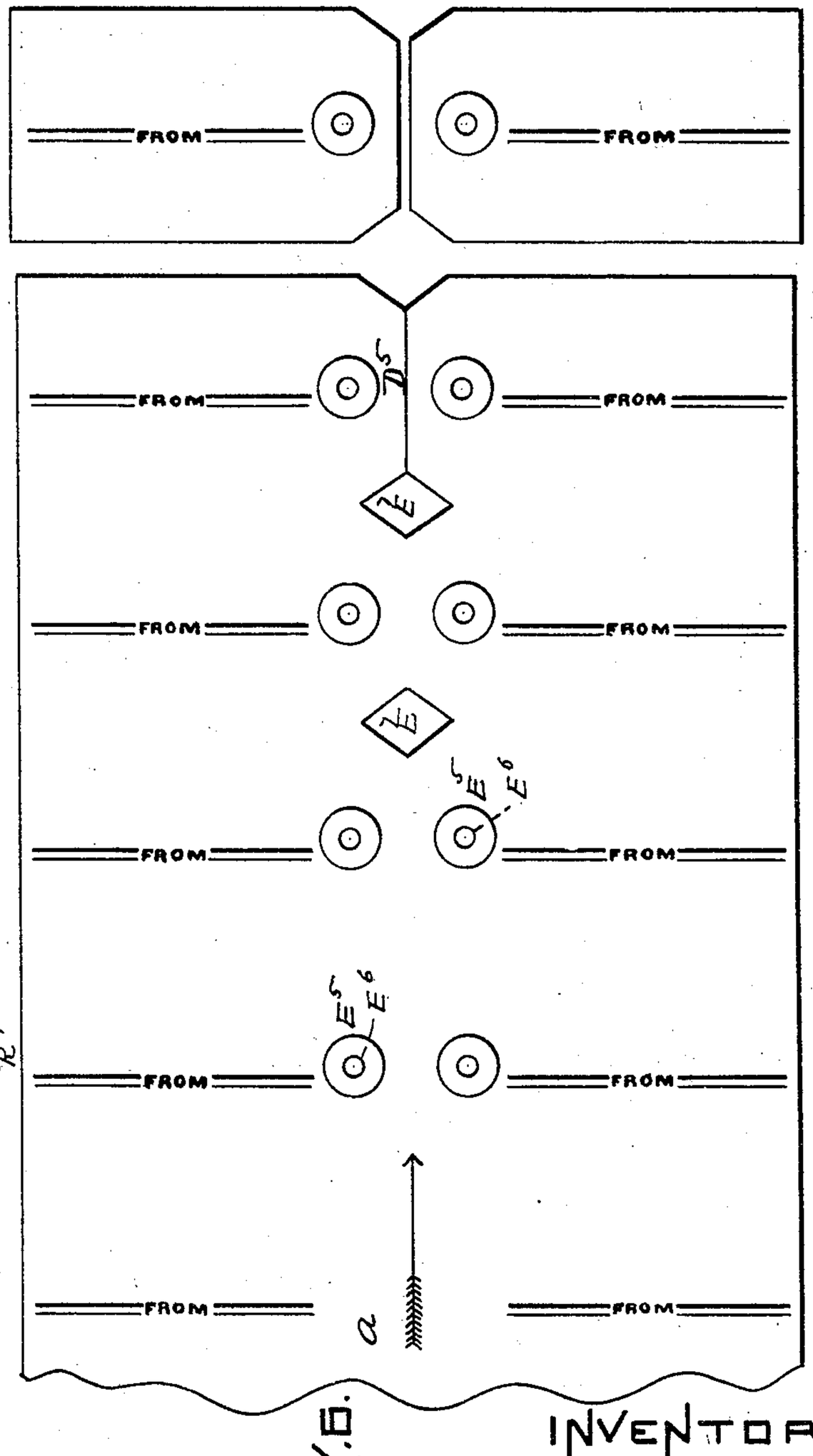

Fig. 8.

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MACHINE FOR MAKING AND PRINTING TAGS.

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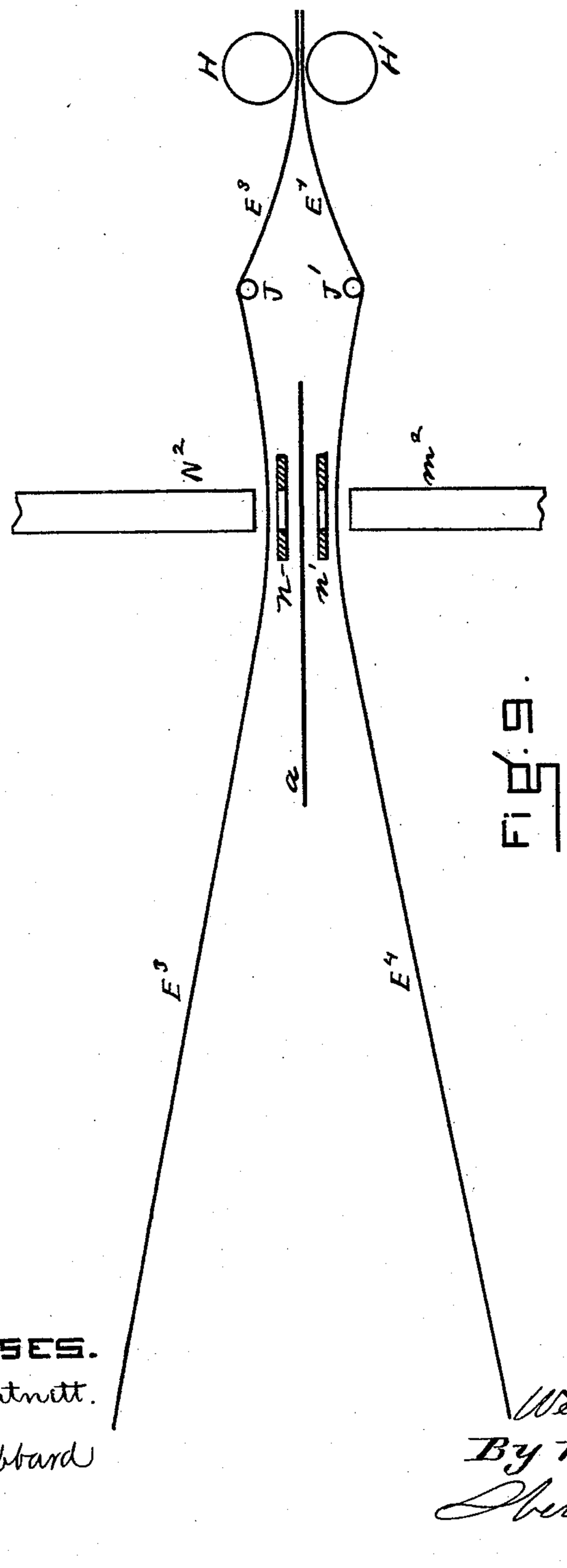

Fig. 9.

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UNITED STATES PATENT OFFICE.

WELLINGTON P. KIDDER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE KIDDER PRESS MANUFACTURING COMPANY, OF CONNECTICUT.

MACHINE FOR MAKING AND PRINTING TAGS.

SPECIFICATION forming part of Letters Patent No. 452,076, dated May 12, 1891.

Application filed January 12, 1891. Serial No. 377,403. (No model.)

To all whom it may concern:

Be it known that I, WELLINGTON P. KIDDER, of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Machines for Making and Printing Tags, of which the following is a specification.

This machine prints and makes tags complete from a roll of paper which is continuously unwound by mechanism (not shown in the drawings) which delivers the sheet in slack.

The machine below described includes an intermittent feed for the sheet delivered in slack, printing mechanism, mechanism for delivering the strips from which the tag-patches are made, mechanism for cutting and applying the patches and punching holes therein and in the tags, mechanism for making diamond-shaped openings therein, whereby the tags are produced with clipped upper corners, and mechanism for cutting the completed tags from the sheet.

The printing mechanism, the intermittent feed, the cutting mechanism, and the mechanism for clipping the corners are not claimed as broadly original in this invention, but are described below in order that the portion of the machine which includes the punching mechanism and the mechanism for applying the tag-patches may be better understood in its operation and its relation to the other parts, which are necessary to a complete tag-making machine.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a side elevation of the machine. Fig. 2 is an elevation of the opposite side. Fig. 3 is a plan view. Fig. 4 is a longitudinal vertical section. Fig. 5 is a plan of the under die in the punching mechanism. Fig. 6 is a view of the blank or sheet of paper from the roll in its different stages. Fig. 7 is an enlarged sectional detail of the punching-dies and cutters and adjacent parts. Fig. 8 is a detail elevation of a crank mechanism below described. Fig. 9 is a diagrammatic view showing the course of the webs from which the tag-patches are formed through the punching mechanism to the feed-rolls.

A is the frame of the machine.

A′ is a roll from which the sheet *a* to be made into tags is delivered in slack by well-known mechanism. (Not shown in the drawings.) This sheet is of width which is at least twice the length of a single tag, as shown in Fig. 6, and drags over guide-rods A^2 A^3, Fig. 4, supported in the frame between guide-collars *a′*, and thence passes through the printing mechanism, not new in this invention, comprising the bed a^2, platen a^3, rollers *b*, and gear-wheels *b′* and b^2. (See Figs. 1, 2, 3, and 4.) This bed is rigidly secured to the swinging arms b^3, which are pivoted to the rocker-shaft B, supported in the frame A. The bed is vibrated by side connecting-arms B′, pivoted to the cranks B^2, fast in the crank-wheels B^3, which are fast on the shaft B^4, supported by the frame. Motion is imparted to the shaft B^4 by the gear-wheel C, which engages with the pinion C′, fast on the driving-shaft C^2, which is supplied with pulleys C^3 in the ordinary manner. The rollers *b* rotate around the bed in the usual manner, and, as above stated, an impression is given to the sheet *a* at each pause in the intermittent feeding thereof.

The mechanisms for continuously unwinding the sheet and for intermittently feeding it into the machine, so that the sheet may be printed during the halts or pauses in the feeding process, are substantially as described in Letters Patent No. 224,440, granted to me February 10, 1880.

D and D′ are respectively the upper and under feed-rollers, between which is the paper *a* from the roll A′. The upper roller is actuated by friction and held by gravity, and the lower feed-roller D′ is fast on the shaft D^2.

Loose on the shaft D^2 is the pinion D^3, which is rigid with the flange *d*, loose on the shaft and carrying the pawl *d′*, which engages the ratchet-wheel d^2, fast on the shaft D^2. (See Figs. 1, 3, and 4.) Motion is imparted to the pinion D^3 by the rack d^3, extending diagonally downward and having its lower end loose on the crank-pin *e*.

Adjustable in the slot *e′* is the crank e^2, which is fast on the shaft e^3, journaled in the frame, Figs. 1 and 3. The shaft is actuated by the gear-wheel D^4, Fig. 3, which is rigidly secured to it, and is engaged by the gear C,

above mentioned. By this mechanism the shaft e^2 has two revolutions to each single revolution of the shaft B^4 of the press proper.

The shaft e^3 supplies motion to all the tag-making and intermittently-feeding mechanism, and by this arrangement two tags longitudinally with the paper *a* are printed at each revolution of the press proper, while the tag-making mechanism and intermittent feed perform at the same time two operations or motions. In other words, there is one motion for printing to two motions for cutting and feeding, the printing being done at every second pause in the intermittent feeding.

E is an independent frame supporting two narrow rolls E' E^2 of patch material, Figs. 1 and 3. The web E^3 from the roll E' passes over the guide-pulley F, supported by the glue-pan F', sustained by the frame E, thence over the glue-roll F^2, which is rotated by the friction of the web, the lower edge of said glue-roll being immersed in said glue-pan. A scraper F^3 regulates the quantity of glue applied to the web, which is glued on its under side, so that the "patch" cut from it may be applied to and adhere to the upper side of the tag. The web E^4 from the roller E^2 passes over the guide-roller *f*, supported by the glue-pan *f'*, sustained by the frame E, thence over the glue-roll f^2, whose edge is immersed in the glue-pan *f'*, thence under and around the guide-rolls f^3, (supported by the glue-pan,) and thence toward the punching mechanism. A scraper f^4 is provided for the roll f^2, whose office is similar to that of the scraper F^3, above described. Thus glue is applied to the upper side of the strip E^4, as it is to provide patches which are to adhere to the under side of the tag. These webs or strips E^3 E^4 are drawn intermittently at the same time with the sheet *a* between the feed-rollers H H', Figs. 2 and 9. The upper roller H is rotated by friction and held by gravity. The lower roller H' is fast to the ratchet-wheel H^2, loosely mounted on the stud H^3, fast on the bracket *g*, rigidly secured to one side of the punching mechanism.

Loose on the stud H^3 is a pawl-lever *g'*, carrying the pawl g^2, engaging the ratchet-wheel H^2. The opposite end of the lever *g'* is pivotally connected with the connecting-rod *h*, which, by means of the pivoted link *h'*, is pivoted to the arm or lever h^2, fulcrumed at h^3 to the bracket h^4, attached to the floor, Figs. 2 and 3. The opposite end of the lever h^2 is pivoted to a rod I, pivoted to an arm I', Figs. 2 and 8, rigid on the crank-pin I^2, fast in the crank I^3, fast on the shaft e^3. The strips E^3 E^4 approach each other with their gummed surfaces next each other and their plain sides next the rolls H H' passing over and under, respectively, the guides J J'. (See Fig. 9.)

K is the frame for supporting the punching mechanism. (See Figs. 1, 2, 3, and 4.) Pivoted in the upper part of this frame is a rocker-shaft K', to which is rigidly attached a lever K^2, pivoted to a connecting-rod K^3, which is pivoted to a plate L, Fig. 2. This plate reciprocates vertically by means of two outside cams L' L^2, fast on the shaft e^3, and two cam-rolls L^3 L^4, pivoted on studs fast to the plate L.

Supported in the frame A is a rocker-shaft *l*, corresponding to the shaft K', provided with a lever *l'*, connected with the lever K^2 by a link l^2.

Centrally located between the two frames or uprights K is the punching and patching mechanism, the latter of which is actuated by the two rocker-shafts described.

l^3 is an arm, Fig. 4, rigidly secured to the shaft K', to which is pivotally secured the link N, pivoted to the head N', which carries a pair of punches N^2, sliding vertically in the blocks N^3, which are fast to a portion of the frame K.

To the shaft *l* is rigidly secured an arm N^4, to which is pivotally secured a link *m*, corresponding to the link N and pivoted to the head *m'*, whereby a second pair of punches m^2 are caused to slide vertically in the block m^3, fast to the frame K.

n and *n'* are the dies with which the two punches N^2 and m^3 co-operate. The blocks are internally grooved at O and O' to receive the moving strips E^3 E^4, Figs. 4, 7, and 9.

Pivotally mounted on the frame K is the rocker-shaft P, to which is rigidly attached a lever P', pivotally joined to the connecting-rod P^2, actuated by the cam P^3, fast on the shaft e^3. Pivotally connected with this cam by means of an ordinary cam-roll is the yoke P^4, adjustably connected with the connecting-rod P^2 by means of the stud P^5 and nuts P^6, Figs. 1 and 3.

Fast centrally on the rocker-shaft P is a lever R, provided with a bifurcated end R', which engages a yoke R^2, which supports a pair of small punches or plungers R^3. The holes R^4 in the lower punches m^2 act as dies to co-operate with the punches or plungers R^3. Thus it will be seen that the sheet *a*, out of which the body of the tags is formed, and the strips E^3 E^4, from which the patches are formed, are fed simultaneously and intermittently into the punching mechanism, and the patches, which are lettered E^5 in Figs. 6 and 7, are pressed upon the opposite sides of the sheet *a* by means of the punches N^2 and m^2, and thus glued thereto, and then the punches or plungers R^3 descend and punch holes (lettered E^6 in Figs. 3 and 6) through both the sheet and the strips. The sheet *a* having been fed through the printing mechanism (not new in this invention) by means of the intermittent feed (also not broadly new) has now had the patches applied and has been punched by the punching mechanism and is ready to pass on to the next operation, which is to have diamond-shaped holes (lettered E^7 in Fig. 6) cut centrally in it, in order that after the tags are cut out of the sheet they may have clipped upper corners.

Adjustably mounted between the punch-

ing mechanism and the feed-rolls D D′ is the mechanism for clipping the upper corners of the tags, such mechanism consisting of the frame S, in which is journaled the rocker-shaft S′, to which is rigidly secured the lever S^2, pivotally joined to the connecting-rod S^3, which is pivotally connected with the lever r, fast on the rocker-shaft r', which is actuated by the sliding plate L by means of a connecting-link r^2, pivotally connected with the lever r^3, fast on the rocker-shaft r', Figs. 2 and 3.

Integral with the lever S^2 are two levers T and T′, which are pivoted to the links T^2 and T^3, respectively. These links are pivotally connected with the plunger-platen t, which carries a diamond-shaped punch t', co-operating with a fixed die-plate t^2, attached to the frame S, Figs. 1, 3, 5, and 7.

The above mechanism for clipping the corners of the tag is not claimed in this invention.

The mechanism for cutting the completed tags from the sheet a is as follows: The upper feed-roll D is provided with a central annular knife D^4, Figs. 3, 4, and 7, which cuts the longitudinal slit (lettered D^5 in Fig. 6) separating the two sets of tags.

By means of the following mechanism the final cutting operation—*i. e.*, lengthwise with the tag and transversely with the sheet a—is performed: The feed-rolls D D′ are journaled in a frame U, (see Figs. 1, 3, 4, and 7,) which is adjustably mounted on the frame A. U′ U^2 are a pair of shears operated (substantially as described in the Letters Patent above referred to) by the connecting-rod U^3, pivotally connected with the lever V, loose on the collar of the rocker-shaft r'. This lever is provided with locking-notches V′, Fig. 2, engaging projections V^2 on the collar V^3, secured to the shaft r' by a spline or equivalent means, whereby it rotates with the shaft, but may be moved longitudinally thereon. The curved slotted lever W communicates longitudinal motion to the collar by means of the lever W′, pivoted at W^2 to the frame A and engaged by the cam W^3. This cam has fast to it the ratchet-wheel X, loose on the shaft X′, supported in the frame. Loose on this shaft or stud X′ is the pawl-lever Y, carrying the pawl X^2. The free end of this lever Y is pivoted to the connecting-rod Y′, operated by the crank I^3 on the shaft e^3, Fig. 8. The object of this combined mechanism is to cut the tags in gangs. By throwing out the projections V^2 from the notches V′ the knife U′ rests in its upper position, allowing the tags to pass through without being cut.

In Fig. 5 an extra hole Z is shown in the die m^3, which is to be used in case a single-width sheet a is fed in, in which case the patch-strips would not be fed in diagonally and would necessarily be at one end of the die.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination, the frame K for supporting the punching mechanism, the rocker-shaft K′, pivoted therein, lever K^2 and connecting-rod K^3, the vertically-reciprocating plate L, the cams L′ L^2, fast on the shaft e^2 and provided with the cam-rolls L^3 L^4, and the rocker-shaft l' and link l^2, substantially as set forth.

2. The blocks N^3 m^3, provided with the dies n n' and horizontally grooved at O O′ to receive the patch-strips E^3 E^4, in combination with mechanism for feeding in the sheet a between the dies and mechanism for feeding in the patch-strips above and below the sheet a and through the grooves in the blocks, substantially as described.

3. In combination, the rocker-shaft P, mounted on the frame K, lever P′, fast to said shaft, connecting-rod P^2, cam P^3, fast on the shaft e^3, yoke P^4, adjustably connected with the connecting-rod P^2, lever R R′, yoke R^2, punches R^3, and lower punches or dies m^2, provided with the holes R^4, substantially as set forth.

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