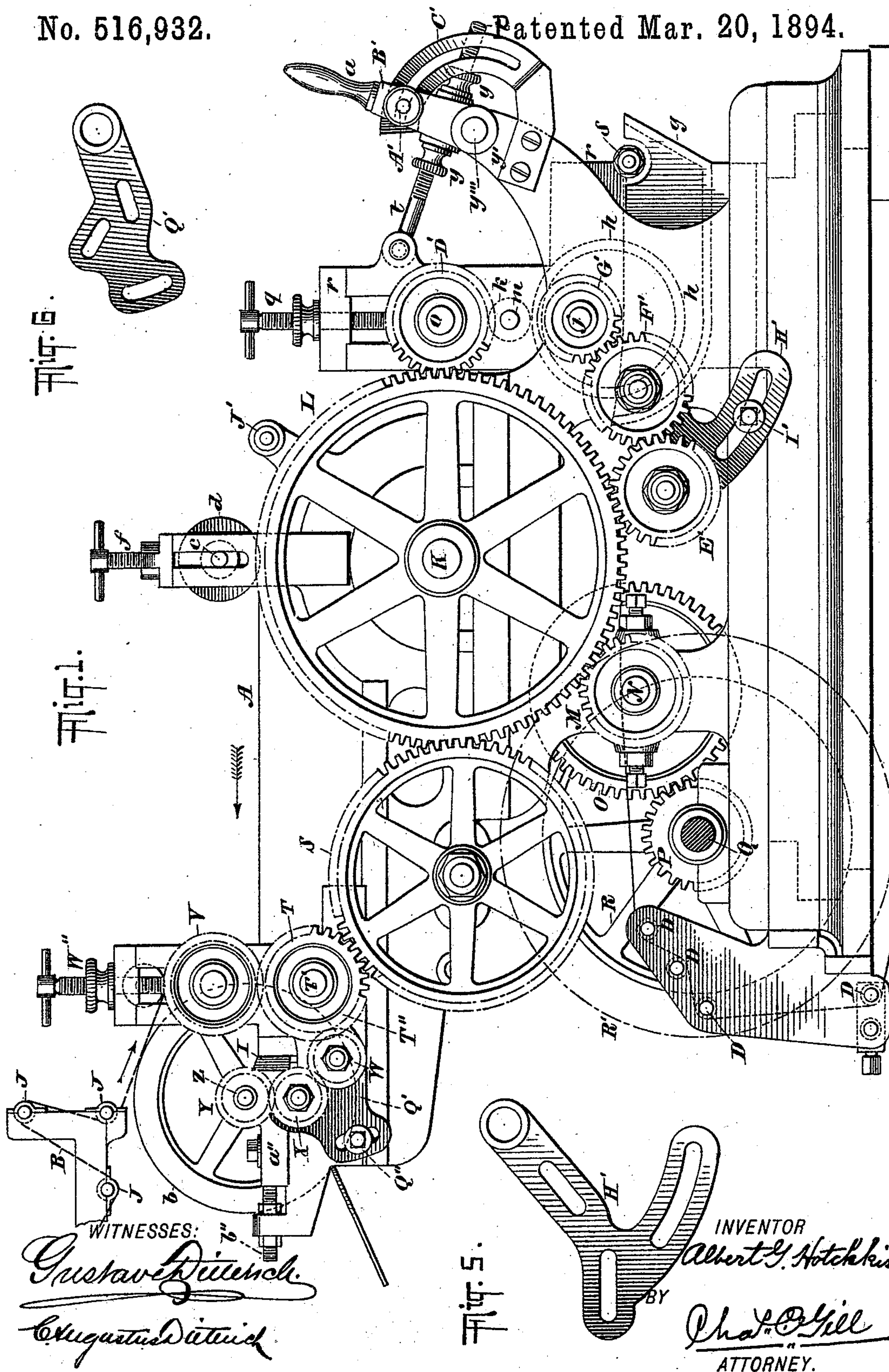


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MACHINE FOR FORMING WRAPPERS OR BLANKS OF PAPER AND
METAL FOIL.

No. 516,932.

Patented Mar. 20, 1894.



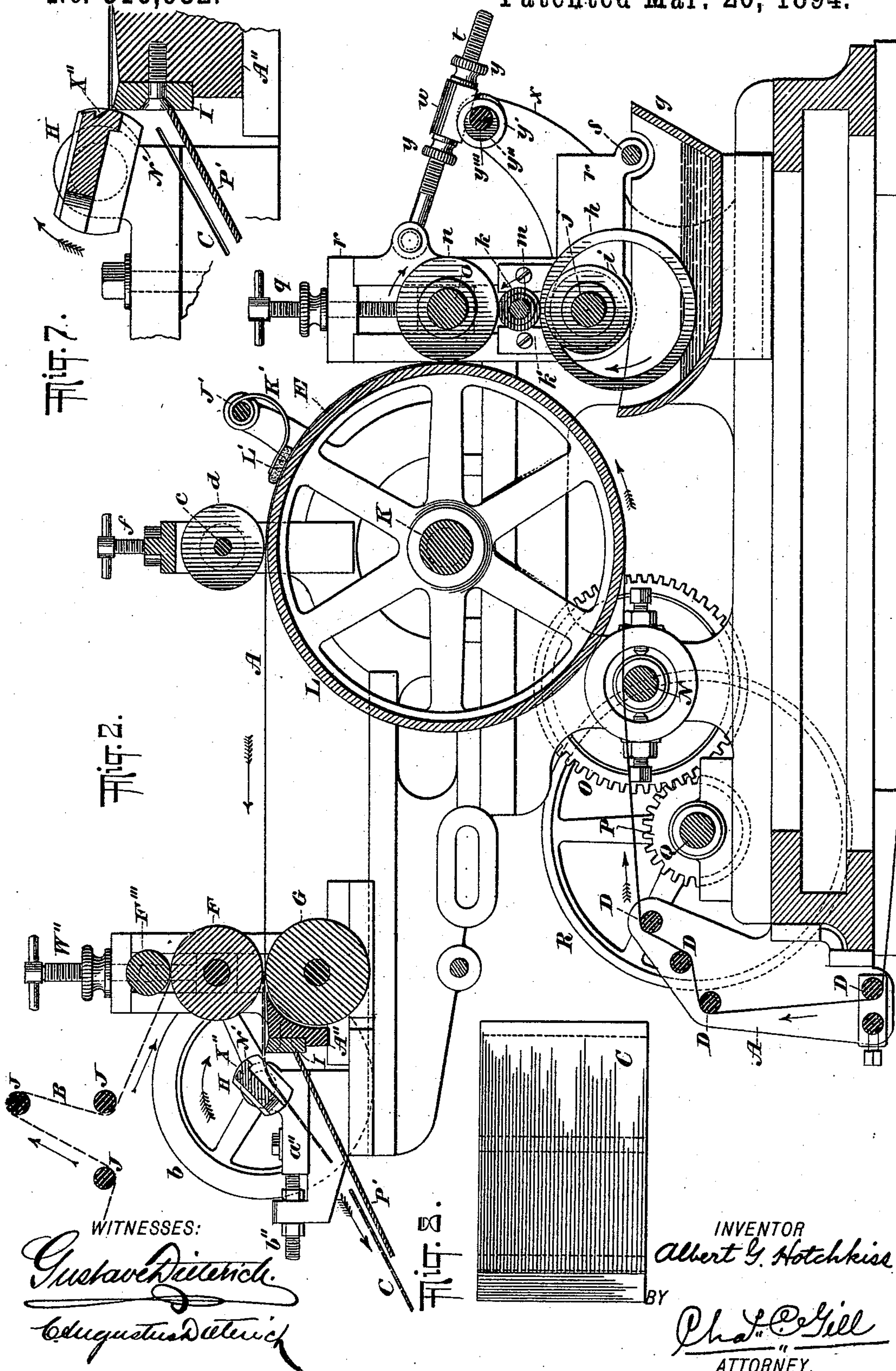
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A. G. HOTCHKISS.
MACHINE FOR FORMING WRAPPERS OR BLANKS OF PAPER AND
METAL FOIL.

No. 516,932.

Patented Mar. 20, 1894.



WITNESSES:

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Augustus Dietrich

INVENTOR

Albert G. Hotchkiss

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(No Model.)

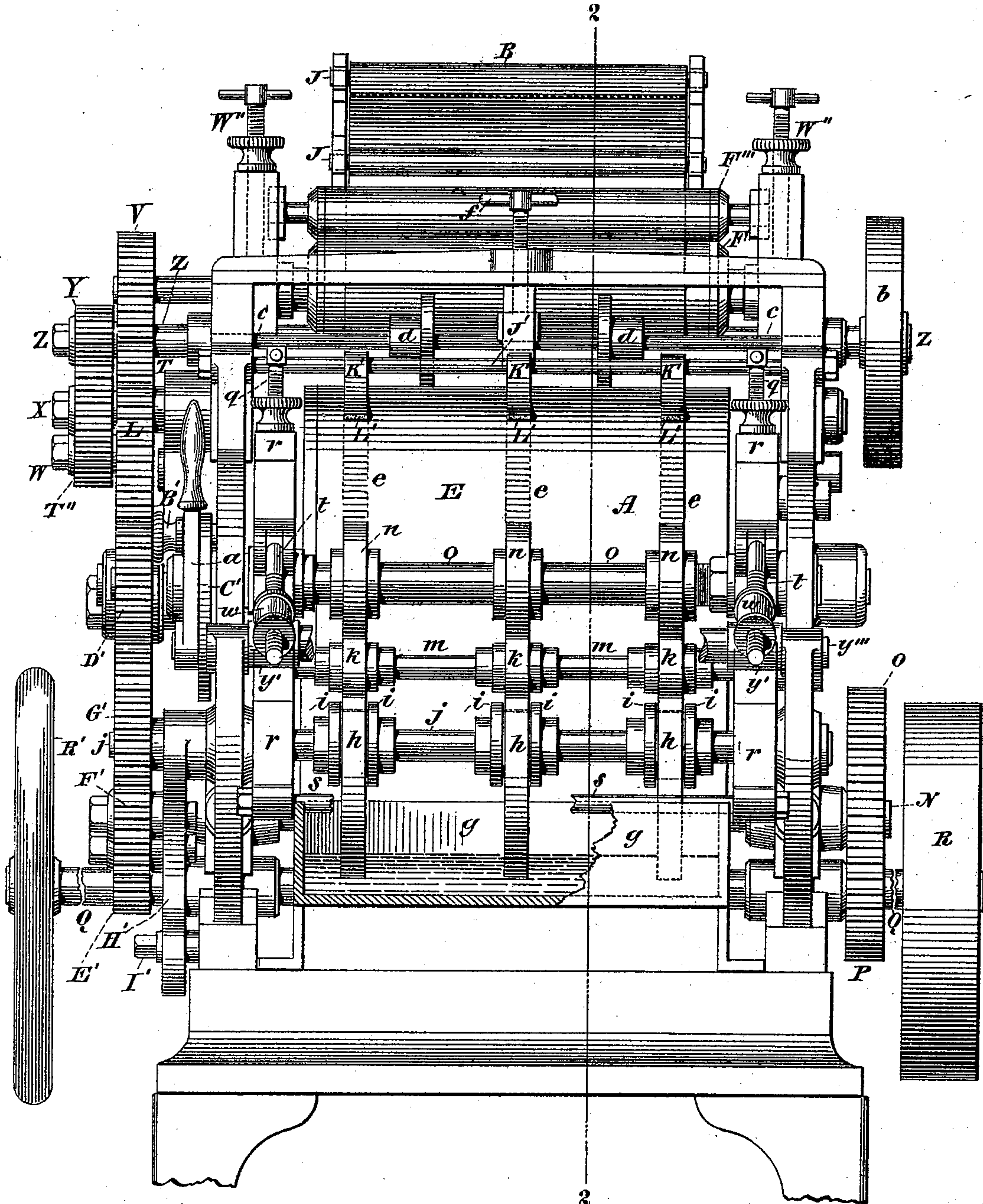
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A. G. HOTCHKISS.
MACHINE FOR FORMING WRAPPERS OR BLANKS OF PAPER AND
METAL FOIL.

No. 516,932.

Patented Mar. 20, 1894.

Fig. 3.



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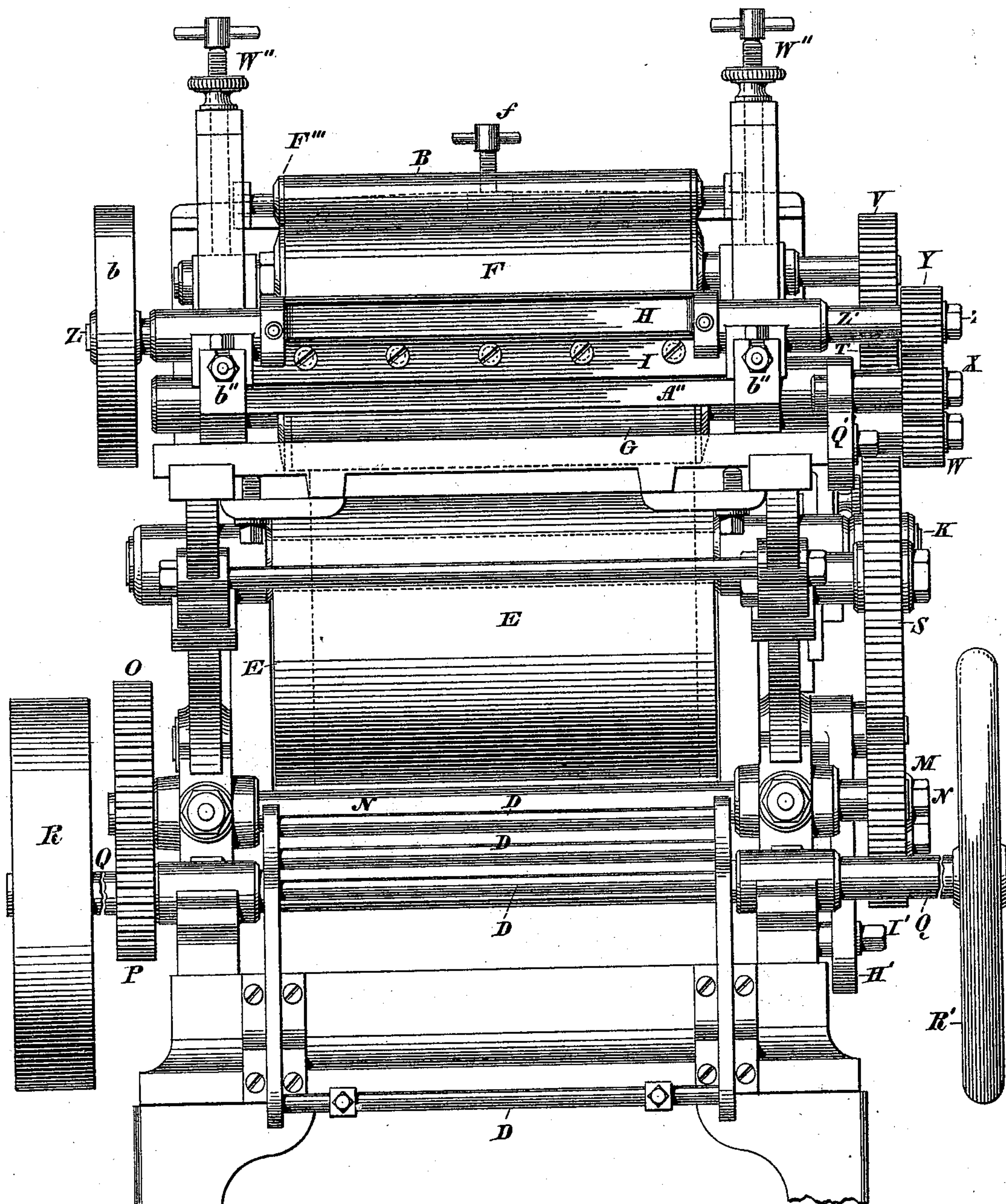
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A. G. HOTCHKISS.
MACHINE FOR FORMING WRAPPERS OR BLANKS OF PAPER AND
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Fig. 4.



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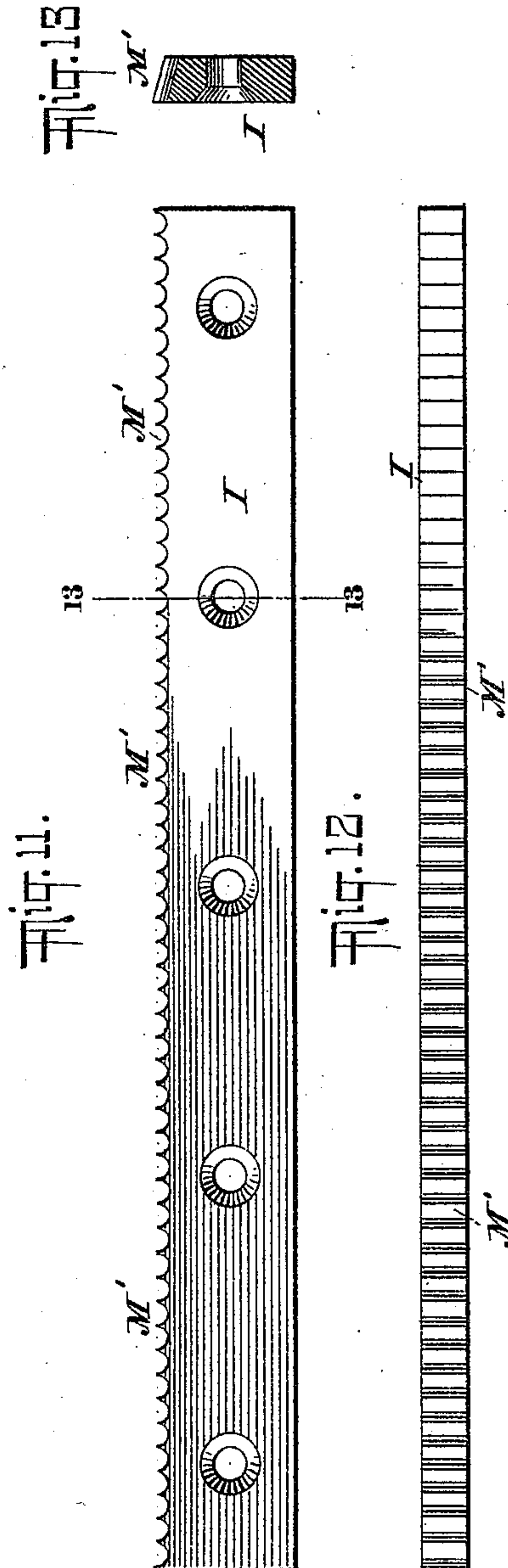
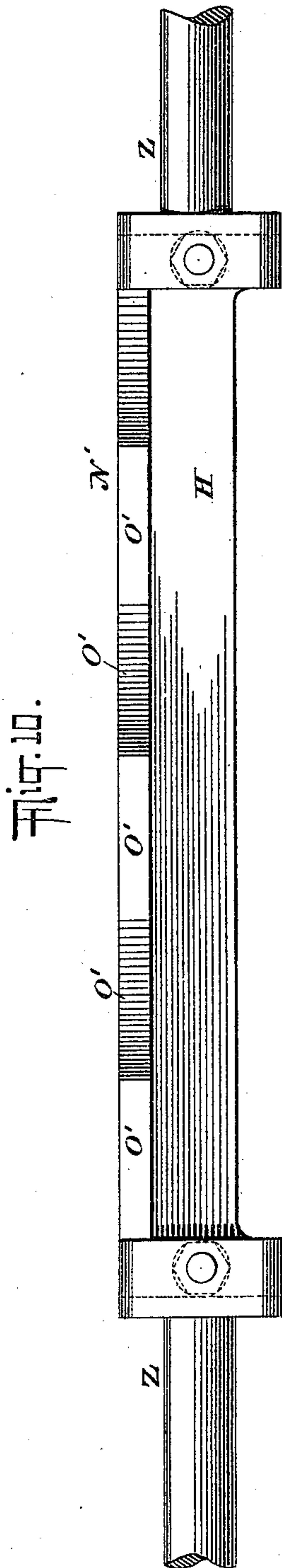
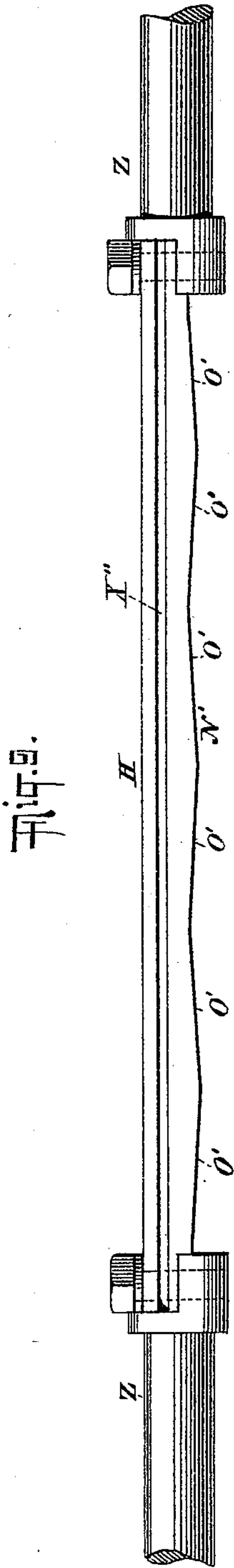
(No Model.)

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A. G. HOTCHKISS.
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No. 516,932.

Patented Mar. 20, 1894.



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UNITED STATES PATENT OFFICE.

ALBERT G. HOTCHKISS, OF NEW YORK, N. Y.

MACHINE FOR FORMING WRAPPERS OR BLANKS OF PAPER AND METAL FOIL.

SPECIFICATION forming part of Letters Patent No. 516,932, dated March 20, 1894.

Application filed December 1, 1893. Serial No. 492,449. (No model.)

To all whom it may concern:

Be it known that I, ALBERT G. HOTCHKISS, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Machines for Forming Wrappers or Blanks of Paper and Metal Foil Pasted Together, of which the following is a specification.

The invention relates to improvements in machines for forming wrappers or blanks of paper and metal foil pasted together, and comprises a machine embodying in its construction means for feeding thereto from independent rolls and in a continuous manner a strip of paper and a strip of the foil, means for automatically applying to one side of said paper an adhesive substance, means for rolling the foil against said side of said paper, and means for severing the composite strip of paper and foil into uniform lengths or blanks adapted for wrapping purposes. The said machine comprises novel mechanism for applying the paste or adhesive substance to the paper in parallel lines or rows instead of covering the entire surface of the paper with the paste; also means for smoothing the paste and removing any surplus thereof, prior to the contact of the foil with the paper, and also novel cutters by which the composite strip of foil and paper may, as rapidly as it leaves the pressure rolls and is thereby formed, be severed into the lengths or blanks for wrappers.

The said machine further comprises novel features of construction, all as hereinafter more fully described and pointed out in the claims.

The object of the invention is to produce a machine which will automatically and with great rapidity form and discharge the paper-and-foil blanks or wrappers of uniform size, in perfect condition and ready for immediate use for the purposes for which they may be adapted.

The invention will be more fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine constructed in accordance with and embodying the invention. Fig. 2 is a vertical longi-

tudinal section of same, the strip of paper passing through the machine being illustrated by a solid line and the strip of foil by a dotted line. Fig. 3 is a front elevation, partly in section, of same, and showing by the dotted line 2—2 the section on which Fig. 2 is made. Fig. 4 is a rear elevation of same. Figs. 5 and 6 are detached side elevations of certain plates hereinafter referred to, which plates form parts of the machine and afford means for adjusting the shafts of certain rollers also hereinafter referred to. Fig. 7 is a detached vertical longitudinal section on an enlarged scale of the cutters or that portion of the machine by which the composite strip of paper and foil is severed into pieces, blanks or wrappers of uniform size. Fig. 8 is a detached view of one of the severed pieces of the composite strip, the dotted lines indicating the rows of paste. Figs. 9 and 10 are respectively enlarged edge and side elevations of the revoluble part of the cutting mechanism by which the composite strip of paper and foil is severed into uniform pieces or blanks. Figs. 11 and 12 are side and edge elevations respectively of the stationary part of said cutting mechanism; and Fig. 13 is a vertical section of same on the dotted line 13—13 of Fig. 11.

In the accompanying drawings A, B, respectively, designate the strips of paper and foil which are to be pasted together to form a composite strip, and then severed into the pieces, blanks or wrappers C of uniform dimensions. The strip of paper A is fed from a roll, not shown, mounted upon any suitable reel which will revolve and permit the feeding out of the paper to the machine, the end of the strip of paper being, as illustrated in Fig. 2, brought around the shafts or rollers D, D, and thence carried around the front side of the main cylinder or drum E, whence the paper passes to the rear end of the machine between the pressure rollers F, G, and cutters H, I, the latter operating, as hereinafter described, to sever the composite strip of paper and foil into its lengths or blanks. The tin foil B is fed from a roll, not shown, and passes around the shafts or rollers J, as shown in Fig. 2, and between the small pressure roller F''' and roller F, around the front side of which it passes and thence extends between the rollers F, G, and upon the upper surface

of the strip of paper A, the strips of paper and foil passing together in face to face contact between the said rollers F, G, and thence moving between the cutters H, I, as indicated in Fig. 2. The pressure of the rollers F G on the foil may be regulated by the usual adjusting screws W''.

The main cylinder or drum E is mounted upon the shaft K which carries upon one end the gear wheel L (see Fig. 1) whose teeth are engaged by the pinion M mounted upon the shaft N, which receives its motion from the gear wheel O, pinion P, driving shaft Q and driving wheel R. The power imparted to the power wheel R or to the hand wheel R' at the opposite side of the machine, see Fig. 4, is transmitted through the shaft Q and pinion P to the gear wheel O and shaft N, whence said power is communicated through the pinion M to the gear wheel L and shaft K, whereby the drum E receives its revolving motion in the direction of the arrow shown in Fig. 2. The motion of the gear wheel L is communicated through the gear wheel S to the gear wheel T mounted upon the shaft T' of the lower pressure roller G, and this gear wheel T engages the gear wheel V mounted upon the shaft of the upper pressure roller F, whereby the motion of the rollers F, G, toward each other is secured. The shaft T' also carries a smaller gear wheel T'', which through the intermediate gears W, X, communicates motion to the gear wheel Y mounted upon the end of the shaft Z, forming a part of or secured to the upper revoluble cutter bar H, which, or the shaft of which, at its end opposite to the gear wheel Y is provided with the balance wheel b.

Over the main cylinder or drum E is mounted in suitable bearings the transverse shaft c upon which are secured the pressure or guide rollers d in position to impinge upon and aid in the feeding forward of the strip of paper A. The rollers d contact with the paper A at points between the rows of paste e which are applied to said paper as illustrated more clearly in Fig. 3, and hence the paste does not come into contact with the said rollers d. The extent of the pressure of the rollers d upon the paper A will be regulated by a set screw f.

At the front end of the machine is provided the mechanism by which the rows of paste are applied to the paper A, and at the opposite end of the machine is provided the mechanism by which the composite strip of paper and foil is severed into lengths.

Upon reference to Fig. 3 it will be noticed that the entire surface of the paper A is not covered with the paste but that the latter is applied in rows lettered e. The mechanism for applying the paste to the paper consists of the receptacle g for the liquid paste, the rings h which enter the paste and are carried between the collars i on the shaft j, the small intermediate rubber rollers k mounted on the shaft m, and the larger contact rollers n mounted on the shaft o, the bearings of the

latter shaft being supported by the set screws q by which said shaft may be adjusted vertically as desired and thus regulate the pressure between the rollers n, k and h. The ends of the shaft m of the rollers k are mounted in vertical guides k', as shown in Fig. 2. The rings h rest in grooves between the collars i, as illustrated in Figs. 2 and 3, and are sufficient in thickness to extend upward above said collars and engage the periphery of the rollers k, which about equal in width the said rings h and also the rollers n with which they are in contact.

During the operation of the machine the rings h are caused to have a revolving motion owing to the pressure exerted on them by the rollers k, and during this revolving motion the said rings h carry upward the paste from the receptacle g, the said paste transferring itself to the rollers k and thence to the rollers n, the peripheries of which press against the paper A as it is being fed over the revolving drum E, and deposit the rows of paste e thereon. The shaft j is journaled in the side frames of the machine, and the shafts m, o, are mounted in the L-shaped frames r which are connected by the transverse rod s and pivotally mounted on bushings at the ends of the shaft j. The rollers n are adjusted with respect to the main cylinder or drum E by means of the set screws t which pass through the sleeves w and are provided with the lock nuts y. The sleeves w are formed or provided with the transverse sleeves y', in which are the eccentrics y'' mounted on the shaft y''', which is mounted in the side frames of the machine, as indicated in Figs. 1 and 3, and has on one end the handle a (see Figs. 1 and 3) by which the shaft may be turned to move the eccentrics upward from the position shown in Fig. 2 and to return the eccentrics to the position shown in Fig. 2, without at either time disturbing the adjustment of the screw t and nuts y. The handle a carries a screw A' and nut B', the former adapted to slide in the groove of the segmental guide C' when the handle is moved, and the nut B' being to secure the handle in any desired position. The segmental guide C' is fastened by means of screws to the side frame of the machine, as indicated in Fig. 1. The object of the screws t and nuts y is to secure the proper adjustment of the rollers n with respect to the drum E in accordance with the thickness of the paper A, and the purpose of the handle a and eccentrics y'' is to enable the attendant, without affecting the screws t and nuts y, to draw the frames r sufficiently forward to afford a proper space between the drum E and rollers n for the insertion of the end of the strip of paper A when the latter is being introduced to the machine. When the handle a and eccentrics y'' are in the positions shown in Figs. 1 and 2, the rollers n will be in close contact with the paper A, and when the handle a is turned downward along the guide C' the shaft y''' will be

revolved to turn the eccentrics upward and this will have the effect of drawing the frames r slightly forward (or to the right, looking at Fig. 2) and thus relieving the rollers n from the drum E a sufficient distance to admit between the rollers and drum the end of the strip of paper. When the handle a is turned downward it may be secured by the nut B'; and after the paper has been passed between the rollers n and drum E and beneath the rollers d , the nut B' will be loosened and the handle a moved upward again to position, where it will be secured by tightening the nut B'. The result of moving the handle a upward, as just stated, is to return the eccentrics y'' to the position shown in Fig. 2 and thus lower the sleeves w and move the frames r and rollers n inward toward the drum E.

As shown in Fig. 1, the shaft of the rollers n receives its motion from the gear wheel L and pinion D', and the shafts j , m , receive their motion from the gear wheel L through the intermeshing gears E', F', and G'. The gears E' and F' are secured by screws and nuts to the plate H', see Figs. 1 and 5, which is swung on the end of the shaft j and fastened by a nut I' to the side of the machine frame. The plate H' is provided with the slots shown in Fig. 5 to permit the accurate adjustment of the gears E', F', with the gear wheel L and gear wheel or pinion G', or a change, if desired, in the sizes of the gears E', F'.

At a point intermediate the rollers d and paste rollers n , the rod J' extends transversely between the sides of the machine and carries the flexed springs K' having on their lower ends the soft wipers L', which are in line with the rows e of paste and have a pressure against the paper A moving over the drum E. The wipers L' operate to remove or hold back any surplus paste that may be carried upward by the paper and to smooth and render uniform the rows e of the paste.

In the rear of the pressure rollers F, G, is the table A'', upon the rear face of which is secured by screws or otherwise the stationary cutter-bar I, which is novel in respect to the form of its cutting edge in that said edge, as clearly illustrated in Figs. 11, 12 and 13, is scalloped its entire length, forming the series of equi-distant pointed edges M' extending across the width of the bar. At a suitable point in the rear of the stationary cutter I is mounted by means of the shafts Z the revoluble cutter-bar H, whose cutting edge N' is, as illustrated in Figs. 9 and 10, formed with the series of inclined or shear-edges O'. The bar H has a revolving motion, as above described, and with each revolution the cutting edge N' of said bar co-operates with the cutting edge of the bar I to sever a length of the composite strip of paper and foil, as indicated in Figs. 2 and 7. In Fig. 2 the composite strip of foil and paper is shown as being fed between the cutters H, I, the cutter H revolving toward the cutter I, and in Fig. 7 on an

enlarged scale the position of the cutter H shown is the one it assumes upon cutting the blank C from the composite strip. The timing of the motion of the cutter-bar H is important in that said motion regulates, to a degree at least, the length of the blank or wrapper C to be severed from the composite strip of foil and paper. With each revolution of the cutter bar H one blank or wrapper C is severed from the composite strip and falls upon the incline P', down which it passes to a suitable table or other receiver, not shown. The timing of the revoluble cutter H may, of course, be effected by the size of the gear wheels T'', W, X and Y, and to permit the ready adjustment of said gear wheels (and a change in the size of same when desired) I have provided a plate Q (see Figs. 1 and 6) which is swung from the shaft T', may be adjustably set by the nut Q'', and is provided with the slots shown to permit the independent and ready adjustment of the gears W, X, or the substitution of larger or smaller gears for those lettered W, X, in a well known manner. I regard the form of the cutting edges of the cutters H, I, as of special importance in that they effectually sever the composite strip in a regular manner without injury to either the foil or paper and with great rapidity. The bar H has a shear cut and operates upon the strip at equi-distant points, its edges O' forming a series of cutting edges operating in unison but on independent portions of the strip. The bar I, as above described is formed with the series of pointed edges M', and these on the contact of the bar H with the strip, penetrate the latter before the severing of the blank or wrapper has been completed, and hence the blank or wrapper is not by one blow chopped from the strip but by a gradual cut extending across its width, is quickly sheared from the strip without disturbing the latter or in any way distorting the blank or its component parts.

It will be observed that the feeding of the composite strip between the rollers F, G, is continuous, and hence when the bar H is descending, as in the act of severing a blank or wrapper, some provision should be made to prevent the edge of the strip left after the blank or wrapper has been removed from riding upward over the bar H, and to this end I have provided the said bar with the groove X'' into which the end edge of the strip will feed and which will during the continued downward motion of said bar carry the said edge of the strip downward and insure the continued feeding of the strip between the cutters H, I.

The operation of the machine will be understood from the foregoing description, in which the functions of the parts are explained in connection with the description of their construction. It may be stated, however, that when power is applied to the belt wheel R or hand wheel R' motion will be imparted from the shaft Q through the gear wheels

P, O, shaft N and pinion M to the gear wheel L, which not only causes the revolution of the shaft K and drum E, but through the gear wheels D', E', F' and G', sets in motion the paste rollers *h*, *k* and *n*, and through the gear wheel S and gear wheels T, V, also sets in motion the rollers F, G. The revolution of the shaft T' carrying the gear wheel T is communicated through the gear wheels T'', W, X, and Y to the cutter-bar H, whereby the latter receives its revoluble motion. The strips of paper A and foil B having been passed into the machine and the latter having been set in motion, the feeding of the strips of foil and paper will continue uninterruptedly, the paper receiving the rows of paste and the foil thereby attached thereto, whereby the composite strip will be formed and passed between the cutters H, I, which sever the same into predetermined lengths or blanks suitable for wrappers. The strips of paper and foil may or may not equal each other in width as may be desired, and in the present instance I have shown the foil as being less in width than the paper, thus leaving an exposed paper edge, as shown in Fig. 8, which may be folded inward in the process of wrapping and covered by a label or stamp as may be desired.

It will be observed that the paste does not entirely cover the surface of the paper, and this is desirable in that there is no unnecessary waste of paste incurred or increased thickness applied to the paper, nor is there any liability of the moisture of the paste shrinking or distorting the paper. The blank or wrapper produced being free of any excess of paste is pliable, may be easily folded and will not be liable to crack or break when in use.

The revoluble cutter H is mounted in bearings *a''* which are adjustable toward or from the cutter I by means of screws *b''*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The machine for forming the composite strip of foil and paper and severing the same into blanks or wrappers, which machine comprises in its structure a main drum around which one of the strips is carried, means for applying the adhesive substance in rows or lines to said strip while passing over said drum, individual wipers of soft material contacting with said strip for smoothing said rows of paste, a pair of rolls between which the foil and paper automatically feed and are pressed together, and a pair of cutters automatically operated from the driving shaft for severing said composite strip into blanks or wrappers of uniform size; substantially as set forth.

2. In a machine for forming a composite strip of foil and paper and severing the same into blanks or wrappers, the main drum around which one of the strips is fed, combined with a paste receptacle, a series of rolls extending from said receptacle to said strip

and adapted to apply the paste in rows or lines thereon, a series of individual soft wipers held by flexed springs for smoothing said rows of paste, a pair of pressure rolls between which the strips of foil and paper pass and are united, and a pair of cutters between which the composite strip passes and which automatically sever the same into uniform blanks or wrappers; substantially as set forth.

3. In a machine for forming a composite strip by pasting individual strips together, the main drum around which one strip passes, combined with the paste receptacle, the revolving rings entering said receptacle, the rolls contacting with said strip on said drum, the rolls intermediate said rolls and rings, and a pair of pressure rolls between which the individual strips are pressed together and united; substantially as set forth.

4. In a machine for forming a composite strip by pasting individual strips together, the main drum around which one strip passes, combined with the paste receptacle, the revolving rings entering said receptacle, the rolls contacting with said strip on said drum, the rolls intermediate said rolls and rings, the wipers pressing against the paper in line with said rolls, and a pair of pressure rolls between which the individual strips are pressed together and united; substantially as set forth.

5. In a machine for forming a composite strip by pasting individual strips together, the main drum around which one strip passes, combined with the paste receptacle, the revolving rings entering said receptacle, the rolls contacting with said strip on said drum, the rolls intermediate said rolls and rings, the pivoted frame carrying said rings and rolls and provided with means of adjustment, and a pair of pressure rolls between which the individual strips are pressed together and united; substantially as set forth.

6. In a machine for forming a composite strip by pasting together individual strips, and then severing said composite strip into blanks, the main drum around which one strip passes, combined with the paste receptacle, the revolving rings entering said receptacle, the rolls contacting with said strip on said drum, the rolls intermediate said rolls and rings, a pair of pressure rolls between which the strips pass and are united, and a pair of cutters between which the composite strip passes and is severed into uniform blanks; substantially as set forth.

7. A machine for forming a composite strip by pasting together individual strips and automatically severing said composite strip into uniform blanks or wrappers, which machine comprises in its structure a main drum around which one of the strips is fed, means for applying an adhesive substance to said strip, a pair of rolls between which the individual strips are pressed together and united, a stationary cutter, and a revolving cutter operated from the driving shaft, between which cutters the composite strip is fed and which

automatically sever the same into uniform blanks or wrappers; substantially as set forth.

8. A machine for forming a composite strip by pasting together individual strips and automatically severing said composite strip into uniform blanks or wrappers, which machine comprises in its structure a main drum around which one of the strips is carried, means for applying an adhesive substance to said strip, means for pressing the individual strips together to form the composite strip, the stationary cutter, and the revoluble cutter operated from the driving shaft, between which cutters the composite strip as formed is fed and which automatically severs the same into uniform blanks or wrappers; substantially as set forth.

9. In the machine for forming the composite strip by pasting together the individual strips fed from different rolls, the main drum around which one strip passes, combined with the paste receptacle, the series of rollers mounted in a pivoted frame and adapted to convey the paste from said receptacle to said strip, the screws and nuts for adjusting said frame, the eccentric shaft for withdrawing the upper part of said frame when introducing the end of said strip around said drum and a pair of pressure rollers between which the individual strips are pressed together and united; substantially as set forth.

10. In the machine for forming the composite strip by pasting together the individual strips fed from different rolls, the main drum around which one strip passes, combined with the paste receptacle, the series of rollers mounted in a pivoted frame and adapted to convey the paste from said receptacle to said strip, the screws and nuts and the sleeves through which the screws pass for adjusting said frame, the eccentric shaft passing transversely through said sleeves, the handle on

said shaft and having a set screw, the segmental guide for said handle and set screw, and a pair of pressure rollers between which the individual strips are pressed together and united; substantially as set forth.

11. In a machine for forming blanks or wrappers from a continuous strip of material, feed mechanism for moving forward the strip, combined with the stationary cutter and the revoluble cutter between which cutters the strip is fed, said revoluble cutter being provided with the groove or notch to receive the edge of the strip and turn the same downward; substantially as set forth.

12. In a machine for forming blanks or wrappers from a strip of material, the stationary cutter having along its indented edge the line of points, combined with the revoluble cutter having the series of inclined cutting edges; substantially as and for the purposes set forth.

13. A machine for forming a composite strip of paper and foil by pasting together the individual strips, and severing said composite strip into blanks or wrappers, which machine comprises in its structure a main drum around which one of the strips is carried, means for applying an adhesive substance to said strip, a pair of rolls between which the individual strips are pressed together and united, the stationary cutter having the line of points along its edge, and the revoluble cutter having the series of inclined cutting edges; substantially as and for the purposes set forth.

Signed at the city of New York, in the county and State of New York, this 28th day of November, A. D. 1893.

ALBERT G. HOTCHKISS.

Witnesses:

CHAS. C. GILL,
ED. D. MILLER.