

A. D. KLABER.
LETTER COPYING APPARATUS.
APPLICATION FILED JAN. 31, 1911.

1,030,310.

Patented June 25, 1912.

4 SHEETS—SHEET 1.

Fig. 1.

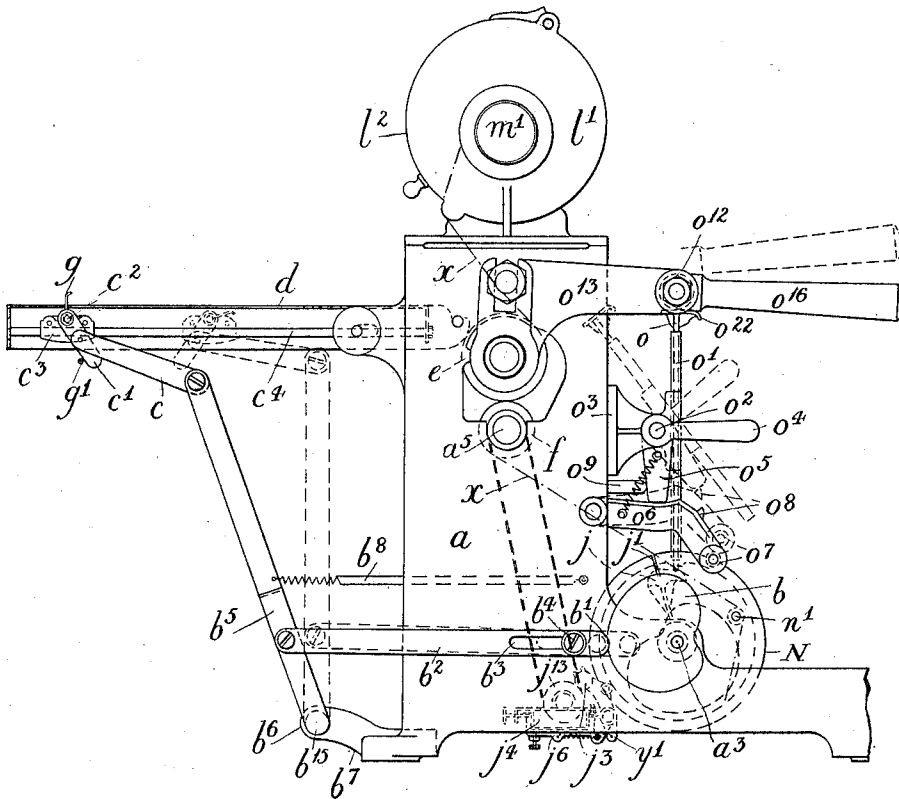
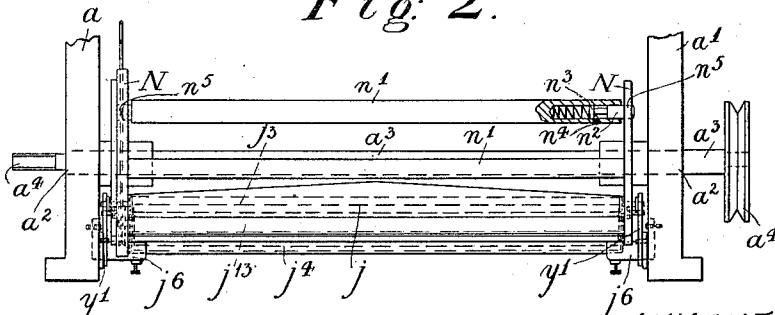


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

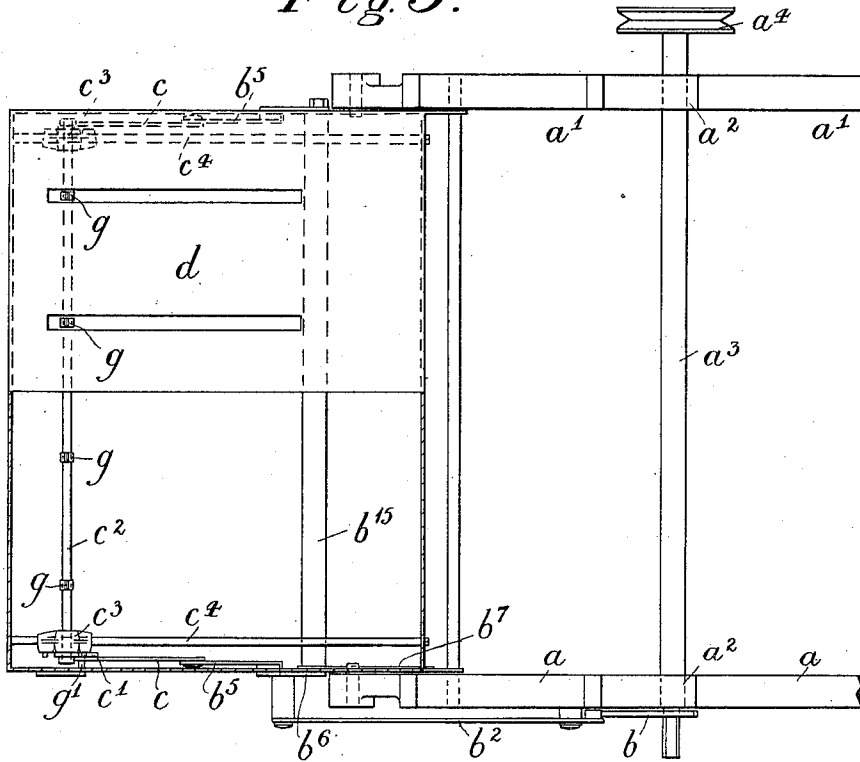
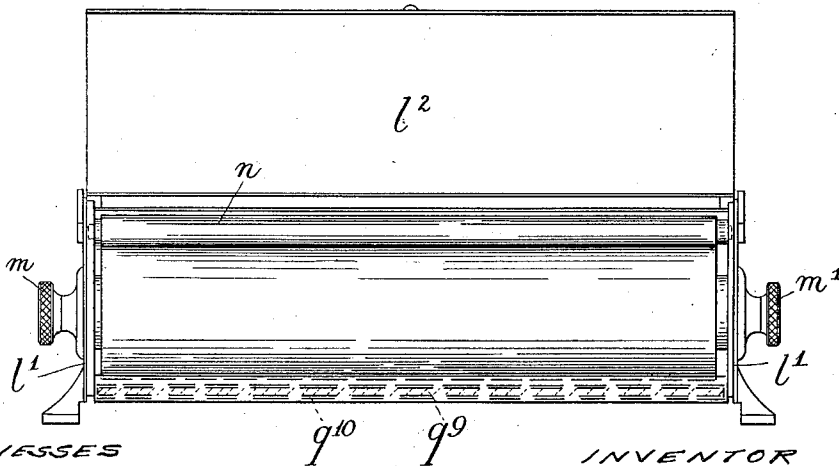


Fig. 4.



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4 SHEETS—SHEET 4.

Fig. 10

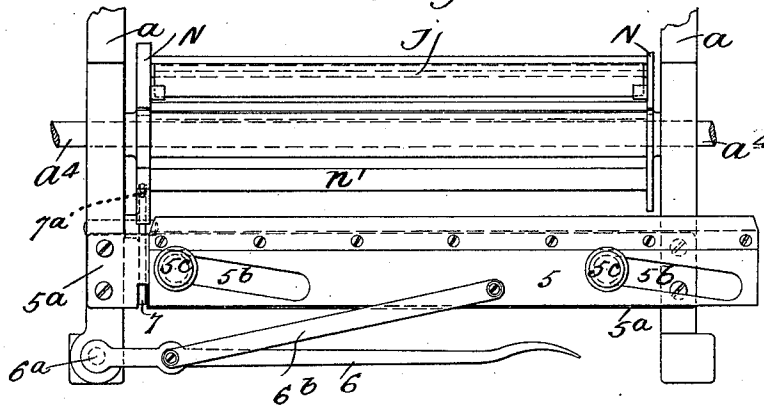
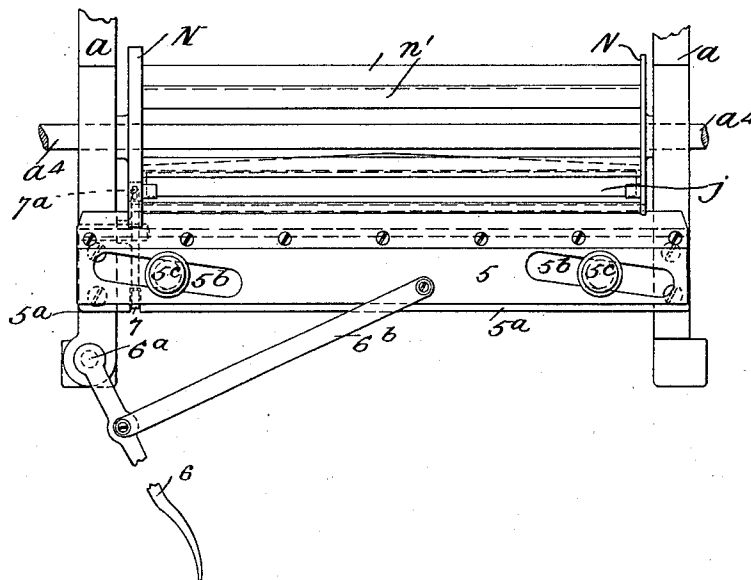


Fig. 11



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UNITED STATES PATENT OFFICE.

AUGUSTUS DAVID KLABER, OF LONDON, ENGLAND.

LETTER-COPYING APPARATUS.

1,030,310.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed January 31, 1911. Serial No. 605,768.

To all whom it may concern:

Be it known that I, AUGUSTUS DAVID KLABER, subject of Great Britain, residing at London, England, have invented new and useful Improvements in Letter-Copying Apparatus, of which the following is a specification.

This invention relates to improvements in and relating to letter copying apparatus and it refers to apparatus of the class in which the copying is effected by submitting the letter or the like, of which the copy is desired, together with a web of thin paper, to pressure between a pair of rollers, the paper afterward being wound upon a suitable reel and while thereon cut up into lengths by means of a knife. In copying apparatus of this character as at present constructed the paper when cut forms a number of loose sheets which in order to preserve them for future reference, are transferred to a so called letter file or binder, or are otherwise secured together.

The present invention has for its primary object to provide means upon the machine itself whereby the sheets may be secured together after the manner of the leaves of a book so that when cut they form as it were a solid body which when removed from the machine may be conveniently handled without fear of loss of any of the sheets.

The present invention has for its further object to provide an improved feed for the letters or sheets of paper bearing the matter to be copied, the construction and arrangement of which is such that the fingers engaging the said letters or the like are withdrawn below the plane of the surface supporting the said letters or the like during the non-effective portion of their travel. By this means the necessity of waiting until the fingers reach the limit of their non-effective movement is avoided and the letters or the like can be placed upon the feed table immediately the fingers reach the end of their forward movement.

The invention also provides for the increase in the effective length of the circumference of the reel or bobbin upon which the copying paper is wound so that it may be varied according to the size of the sheets of paper bearing the matter to be copied. The invention finally provides an improved method and means for mounting the roll of copying paper so that the spindle heretofore required to support it, is dispensed

with, means for preserving the necessary tension of the paper as it is drawn off the roll, and means for preserving the desired degree of humidity in the receptacle for the roll of copying paper so that it does not become too dry if left for any length of time.

In order that the invention may be better understood, drawings are appended illustrating a machine embodying the various improvements above specified and in which:—

Figure 1 is a side elevation of the machine. Fig. 2 is a plan showing the arrangement of the take up roll or bobbin. Fig. 3 is a plan with the paper container omitted. Fig. 4 is a front elevation of the receptacle for the copying paper with the lid open. Fig. 5 is a cross sectional view showing the gumming device. Fig. 6 is a sectional view to a larger scale of the gumming device shown in Fig. 5. Fig. 7 is an enlarged sectional view of one end of the adjustable longitudinal members of the take up roll. Fig. 8 is an enlarged cross section of the container for the moistening pad. Fig. 9 is a cross section of the copying paper receptacle. Fig. 10 is a plan view of the knife in its inoperative position and Fig. 11 is a similar view showing the knife in its operative position.

Referring to the accompanying drawings, a a^1 indicate side members of the main frame of the apparatus which are connected in any suitable manner and which are provided at a^2 with perforations for a transverse shaft a^3 driven by means of a pulley a^4 Figs. 2 and 3 which received motion by means of a belt, not shown, from a second shaft a^5 and which may be driven by hand or from a suitable source of power, such as an electric motor.

Secured to one end of shaft a^3 is a cam b upon the periphery of which bears a roller b^1 mounted upon the end of a rod b^2 slotted at b^3 for the passage of a screw b^4 tapped into the side frame a . The rod b^2 is connected at its outer end to a lever b^5 upon a shaft b^{15} pivotally mounted at b^6 upon an extension b^7 of frame a . The lever b^5 is drawn inward by means of a spring b^8 connected at one end to frame a and at the other end attached to lever b^5 . The lever b^5 at its upper end is connected to a short link c which link at its opposite end is connected to a short lever c^1 secured to one end of a transverse bar or rod c^2 supported at

each end upon slippers c^3 sliding upon parallel rods c^4 disposed beneath the feed table d upon which the letters are placed and from which they are fed forward between the rollers e f together with the copying paper indicated by x . The rod c^2 has secured to it pins or projections g which work in slots on the table d and when in their operative positions project above the level of the said table d . The rod c^2 is free to rotate in the slippers c^3 and consequently as the lever moves inward under the action of the spring b^8 the rod is maintained in a position such that the projections g are in the position shown in Fig. 1 and a letter or the like placed on table d will be pushed forward to and carried by the paper x around the rollers e and f . Upon the return of the rod c^2 the said rod is partly rotated and the projections thereon are disposed below the plane of the feed table as shown on dotted lines in Fig. 1. By this means the table is available immediately the return movement of the rod c^2 commences and there is no necessity to wait until it reaches the end of its backward movement before the next document can be placed in position on the feed table. To insure the proper rotation of rod c^2 at the end of its outward stroke, a pin g^1 is arranged in the path of the lever c^1 and acts as a tappet coming into contact with the edge of lever as it reaches its terminal position see Fig. 1. Mounted upon each end of the shaft a^3 are disks N provided with holes adapted to receive the ends of the transverse rods n^1 which form the take up roll upon which the paper is wound after the copying has been effected by means of the aforesaid rolls e f . The rods n^1 are adjustable so far as their position relatively to the center of the disks are concerned and with this object there are provided other holes n^5 in the disks with which engage spring pressed studs n^2 , retained in the ends of the rods n^1 by means of collars such as n^3 , the outer face of which abuts against the end of short screws n^4 in Figs. 2 and 7. When it is desired to alter the position of the rods, the studs are pressed inward until free of the holes, when the rods may be removed and placed in engagement with holes nearer to or farther away from the center according as it is desired to reduce or increase the amount of paper taken up at each rotation of the spindle a^3 . The end of the copying paper x is secured by means of the spring plate i which presses the end of the paper into the recess i^1 in the transverse rod i^2 in Fig. 5. Formed integral with or secured in any convenient manner to the disks n is a transverse member j Figs. 1, 2, 5, 6 and 10 slotted at j^1 to permit the passage of the knife 5 (see Figs. 10 and 11) when cutting the copying paper coiled on the take up roll.

The knife before referred to, see Figs. 10 and 11, is slidably mounted upon a cross bar 5^a supported at each end upon frame a . The knife is provided with inclined slots at 5^b for the passage of studs 5^c whereby the knife is secured to the frame and at the same time the inclination of the slots secures the necessary sliding and longitudinal motion of the said knife. The operation of the knife is effected by means of a lever 6 pivoted at 6^a to the frame a and connected by means of a link 6^b with the said knife 5. In order that the knife may not be actuated except at such times as the slot j^1 is in the position to receive it, a lever 7 is mounted upon the inside of the frame a and carries a roller 7^a , which roller bears against the periphery of the disk N until such time as the said disk permits the roller to rise and the outer end of the lever to fall. As the outer end of lever 7 normally projects into the path of the knife 5 see Figs. 10 and 11, the removal of said end from said path will permit the knife to be actuated. The member j is extended at j^{12} and forms a rigid surface against which bears a roller j^3 conveying gum from a roller j^{13} driven from shaft a^5 by a belt and dipping into a reservoir j^4 containing gum or other adhesive and which receptacle carries an adjustable wiper j^5 by which the amount of the gum on roller j^3 is regulated. The reservoir j^4 runs transversely between the frames a a^1 and is mounted upon brackets j^6 secured to the frames a a^1 and having bearings for a shaft y Figs. 5 and 6. Mounted upon shaft y are levers y^1 which carry the rollers j^3 . A spring is provided for each lever y^1 , the tendency of which is to keep the said arm always bearing away from the gum roller j^{13} so that the gum is applied to the paper. As however, it is not required that the gum shall be applied except for a very short period during the rotation of the take up roller, the levers y^1 are each provided with rollers which bear against the periphery of one of the disks N and by this means the roller j^3 is held clear of the paper except at such times as the recess k^1 in the disk permits it to move inward and apply the gum to the copying paper.

The copying paper x before referred to is wound upon a cardboard or other cylinder l , see Fig. 9 and it is disposed within a circular receptacle l^1 which is mounted at the upper ends of the frames a a^1 as shown in Fig. 1. The receptacle l is closed and access is attained to it by means of the door l^2 which forms a continuation of the body of the receptacle so that when closed there is as little passage for the external air as possible. The roller is supported at each end by projections which are formed upon the screw or other studs m m^1 supported on the end walls of l^1 . The projections on the screws

m m^1 enter the hollow core of the roll and by this means support it without the necessity of employing the usual transverse spindle. In order that the paper roll shall not rotate too freely, I provide a jockey roll n which rests upon the surface of the roll x and is supported at each end by means of slots n^{11} in the inside of the end walls of receptacle l^1 . A radial slot n^{12} is also provided communicating with slots n^{11} so that the roller may be supported clear of the roll so that it does not interfere with the ready removal or replacement of the said roll when required.

Where the apparatus is not constantly in use, it is found that the copying paper, which is treated with some suitable hygroscopic substance, is apt to get too dry for use, and in order that this may be avoided, I provide a pad q^9 adapted to be moistened and which pad is contained within a perforated case q^{10} removably secured within the receptacle l^1 .

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A letter copying apparatus comprising frames supporting a roll of copying paper, a table for the letters to be copied, pressure rolls between which the copying paper and the letters are passed, fingers feeding said letters to said rolls, said fingers during their noneffective movement being disposed beneath the surface supporting the letters, a take up roller for the copying paper, a knife for cutting the copying paper when coiled upon the take up roll, means for preventing the drying of the copying paper when in the apparatus and means for securing the convolutions of the copying paper before it is cut.

2. Letter copying apparatus comprising frames supporting a roll of copying paper, means for keeping said paper moist, a table for the letters to be copied, pressure rolls between which the letters and the copying paper pass, fingers feeding the said letters to the pressure rolls, the said fingers being pivotally mounted upon supports sliding upon guides arranged beneath the letter table, an arm connected to the pivots of the feed fingers, means connected to the arm and effecting the reciprocation of the finger carrying bodies, and by which the arm is inclined in opposite directions upon its inward and outward movement, a take up roll for the copying paper, means for cutting the copying paper when coiled upon the roll and means for securing the convolutions of the paper together before cutting.

3. Letter copying apparatus comprising frames supporting a roll of copying paper, means for keeping said paper moist, a table for the letters to be copied, pressure rolls

between which the letters and the copying paper pass, fingers feeding the said letters to the pressure rolls, the said fingers being pivotally mounted upon supports sliding upon guides arranged beneath the letter table, an arm connected to the pivots of the feed fingers, a lever connected at one end to the arm upon the feed finger pivots and pivotally mounted at the other to the frame of the apparatus, a link connected to said lever, a guide for the link, a spring acting against the outward movement of the lever, a roller upon the end of said link, a take up roll for the copying paper, a cam upon the spindle of the take up roller upon which bears the roller on the feed finger lever link, means for securing the convolutions of the paper on the take up roll together and means for cutting the paper upon the take up roll.

4. Letter copying apparatus comprising frames supporting a roll of copying paper, means for keeping said paper moist, a table for the letters to be copied, pressure rolls between which the letters and the copying paper pass, fingers feeding the said letters to the pressure rolls, the said fingers being pivotally mounted upon supports sliding upon guides arranged beneath the letter table, an arm connected to the pivots of the feed fingers, a lever connected at one end to the arm upon the feed finger pivots and pivotally mounted at the other to the frame of the apparatus, a link connected to said lever, a guide for the link, a spring acting against the outward movement of the lever, a roller upon the end of said link, a take up roll for copying paper, a cam upon the spindle of the take up roller upon which bears the roller on the feed finger lever link, means for applying an adhesive to the convolutions of the paper as they are coiled upon the take up roller, and means for cutting the paper on the take up roll.

5. Letter copying apparatus comprising frames supporting a roll of copying paper, means for keeping said paper moist, a table for the letters to be copied, pressure rolls between which the letters and the copying paper pass, fingers feeding the said letters to the pressure rolls, the said fingers being pivotally mounted upon supports sliding upon guides arranged beneath the letter table, an arm connected to the pivots of the feed fingers, a lever connected at one end to the arm upon the feed finger pivots and pivotally mounted at the other to the frame of the apparatus, a link connected to said lever, a guide for the link, a spring acting against the outward movement of the lever, a roller upon the end of said link, a take up roll for the copying paper, a cam upon the spindle of the take up roller upon which bears the roller on the feed finger lever link, means for applying an adhesive to the convolu-

tions of paper as they are coiled upon the take up roller, such means comprising a gum reservoir, a roller rotating in said reservoir, a lever carrying a second roller, means for intermittently causing said roller to contact with the gum roller and the copying paper, and means for cutting the paper on the take up roller.

6. Letter copying apparatus comprising frames supporting a roll of copying paper, means for keeping said paper moist, a table for the letters to be copied, pressure rolls between which the letters and the copying paper pass, fingers feeding the said letters to the pressure rolls, the said fingers being pivotally mounted upon supports sliding upon guides arranged beneath the letter table, an arm connected to the pivots of the feed fingers, a lever connected at one end to the arm upon the feed finger pivots and pivotally mounted at the other to the frame of the apparatus, a link connected to said lever, a guide for the link, a spring acting against the outward movement of the lever, a roller upon the end of said link, a take up roll for the copying paper, a cam upon the spindle of the take up roller upon which bears the roller on the feed finger lever link, means for applying an adhesive to the convolutions of paper as they are coiled upon

the take up roller, such means comprising a gum reservoir, a roller rotating in said reservoir, a lever carrying a second roller, a cam upon the take up roller, a spring acting upon the gum carrying roller to keep one end of lever carrying said roller in contact with its cam and means for cutting the convolutions of paper upon the take up roller.

7. In a letter copying apparatus, the combination with a take-up roller and a knife for severing the convolutions of paper, of means for securing the convolutions of paper together comprising means for applying adhesive to the convolutions.

8. In a letter copying apparatus, the combination with a take-up roller and a knife for severing the convolutions of paper, of means for securing the convolutions of paper together comprising an intermittently actuated cam carrying a roller adapted to contact alternately with the paper and a roller in a gum reservoir.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AUGUSTUS DAVID KLABER.

Witnesses:

GEO. E. BORASTEN,
M. E. STRATFORD.