

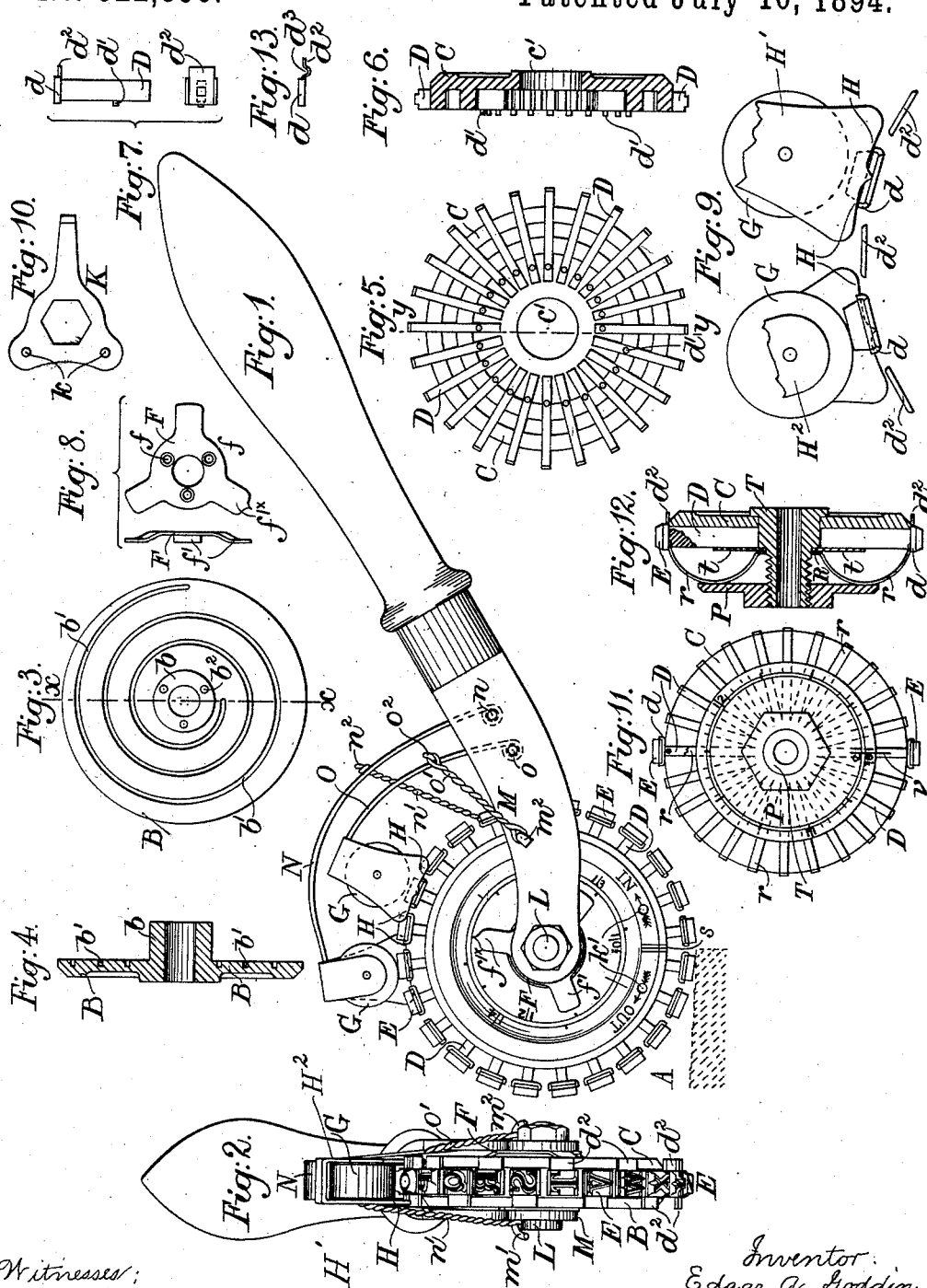
(No Model.)

E. A. GODDIN.

APPARATUS FOR USE IN PRINTING LETTERS OR OTHER INDICATIONS
FOR INDICES OF BOOKS, &c.

No. 522,890.

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Witnesses:
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UNITED STATES PATENT OFFICE.

EDGAR ALFRED GODDIN, OF LONDON, ENGLAND.

APPARATUS FOR USE IN PRINTING LETTERS OR OTHER INDICATIONS FOR INDICES OF BOOKS, &c.

SPECIFICATION forming part of Letters Patent No. 522,890, dated July 10, 1894.

Application filed February 23, 1894. Serial No. 501,211. (No model.) Patented in England January 26, 1893, No. 1,790; in France July 22, 1893, No. 231,693, and in Belgium July 24, 1893, No. 105,882.

To all whom it may concern:

Be it known that I, EDGAR ALFRED GODDIN, engineer, a subject of the Queen of Great Britain, residing at 138 Brooke Road, Stoke Newington, in the city of London, England, have invented certain new and useful Improvements in Means or Apparatus for Use in Printing Letters or other Indications for the Indices of Books and other Purposes, (for which I have received Letters Patent in Great Britain, No. 1,790, dated January 26, 1893; in France, No. 231,693, dated July 22, 1893, and in Belgium, No. 105,882, dated July 24, 1893;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

These improvements have reference to means, or apparatus for use in printing letters, or other indications for the indices of books, and other purposes, wherein letters or other indications are printed in alternate, or equivalent arrangement of colors say one letter black as A and the next letter red as B and so on, and yet the printing is effected rapidly and continuously. These letters or indications are preferably formed of vulcanized india rubber mounted on or secured to plates or surfaces of metal, while these again are borne by slides or supports arranged with capability of sliding in slots or grooves or guideways which extend radially from the central compartment to the periphery of a wooden, or other wheel or circular body of the apparatus. This central compartment contains the hub in which the axis rotates to which the handle or support for the tool is attached. Upon each slide, or type support is formed a projecting pin, or equivalent part, and upon the hub and against the wheel and slides; and so as to engage the pins, or equivalent parts on the slides, is mounted a plate, or disk, having on its inner face a snail, cam, volute or other eccentric or pattern groove, or surface into which the pins engage, or by which they, or their equivalents are operated when the said plate is turned relatively to the wheel so as to cause the respective slides and the type surfaces carried by them, to be protruded, or withdrawn from their grooves,

more or less and thereby to increase, or decrease the pitch of the wheel, or the relative spacings of the types apart. This turning of this plate may be effected by a key, and the plate may be pressed to the wheel by a spring. The inking of the respective types with their respective colored inks is effected by means of rollers one to each color each roller mounted on an axis borne by a spring, or other arm, which arms also carry projecting parts which each come in contact with correspondingly formed surfaces or patterns formed on or applied to the type plates and adapted to cause the colored ink roller to be lifted clear of the type surface not to be inked by it.

In place of causing the protrusion and retraction of the slides or supports for the types by a cam or eccentric or snail I may effect their in and out movements by means of springs radiating from a central support and each spring having some convenient attachment to the particular slide, or support, as by a hole in the spring taking on to the stud of the slide and when by a nut, or equivalent part the arch, with which each spring is formed is flattened each such spring becomes lengthened as regards the distance of the end from the central support and the slide to each type pushed outwardly. I prefer to affix to the snail, or equivalent part, for regulating the movements of the slides an indicator adapted to co-operate with a scale so as to serve as a guide to the operator in determining the amount of regulation desired.

In the drawings, Figure 1 is a side elevation of my improved apparatus. Fig. 2 is a front elevation thereof. Fig. 3 is a detail of the scroll plate B, and Fig. 4 a section taken on the line xx of Fig. 3. Fig. 5 is a view showing the expansible wheel A, with the scroll-plate, B, removed, and the slides D, without their letter plates, d . Fig. 6 is a section taken on the line $y-y$ in Fig. 5. Fig. 7 shows a side elevation and plan of one of the letter slides D without the letter, E. Fig. 8 shows a side view and plan of the spring plate, F. Fig. 9 is a diagram showing the ink rolls, G, their lifting cams, H, and adjacent letter plates, d . Fig. 10 is the key for altering the position of the parts. Figs. 11 and 12 are respectively a side elevation and section of a

modified form of the expansible wheel, A; and Fig. 13 shows an edge view of another form of letter plate.

The object of my improved apparatus is to enable indices or other single or multi-colored indications to be printed in different lengths with one tool, which I effect by means of an expansible wheel supported between the bifurcated ends of a forked holder having, at its other end a suitable handle. This fork also supports one, or more, ink-roll carrying arms, which are capable of movement about their pivotal connections.

The expansible wheel, A, consists mainly of a guide-plate, C, having two rings, formed upon the same side of it, which are divided so as to form guide ways for the letter slides D; these slides have, at their outer ends, plates, d , which carry the letters E, their overlapping portions, d^2 , which engage the ink-roll lifting cams, afterward to be described, constituting the means by which the proper color is selected for the letter borne by the plate of which it is a part. These letter slides, D, are each provided with a pin, d' , which, co-operating with the spiral groove, b' , of the scroll plate, B, constitute the means by which the wheel, A, is expanded and contracted.

The scroll-plate B, is furnished with a spiral groove, b' , and a boss, b , which fits the central hole, c' , of the guide-plate, C, and is held in that position by the spring-plate F (Fig. 8) which is secured to the said boss by screws (not shown) which enter the holes, f and b^2 , the arms f' of the said spring-plate, F, being set down, bear upon the back of the guide-plate C, permitting it to be rotated, against their frictional resistance, upon the bars, b , but preventing its withdrawal; one of the arms, f'^x , is pointed and serves as a finger, which shows upon the graduated scale, S, upon the back of the guide-plate, C, the length of index or other indication that the machine will print in a given position. The boss, b , is bored to receive a bolt or pin, L, which forms a bearing and is held by the forked end of the holder M.

The arms, N and O, are each provided at one end, with a roll, carried in suitable bearings and supplied with different colored inks, these bearings consist of two downwardly bent ears, H' , H^2 between which is placed the pin about which the roll revolves, one of these ears, (H') is longer than its fellow and has formed upon its lower edge a cam surface H which engages the over-lapping portions, d^2 , attached to the letters that the roll that this cam carries is not to ink and causes it to be lifted clear; the other ends of these arms are connected to the fork, M, by the screws, n and o , about which they are capable of movement, their outer ends being constrained to rest upon the letters E, or the overlapping portions d^2 by the tension springs n' and o' , which are connected to the pins n^2 and m' ; and o^2 and m^2 respectively.

It will be seen by reference to Fig. 2, that

the letter plates, d , are attached to the slides, D, in such a way that their overlapping portions, d^2 , which form part of the ink-roll lifting device, lie in the plane occupied by the cam carrying the ink-roll, G, from which the letters, to which they are attached, are not to receive their color.

As the machine illustrated is constructed to print in two colors only, it is convenient to attach these plates which carry the letters that are to receive the same color to their slides with their overlapping portions, d^2 , pointing to the opposite side of the wheel to that to which the others point, but when more than two colors are used the surfaces of the over-lapping portions, d^2 , are of varying shapes (see Fig. 13) the form of each being such as to lift all the inking rolls but the one from which the letter, to which it is attached, is to receive its color, whose cam is permitted to pass through a channel, d^3 , lying in the same plane as that occupied by itself; such a machine would have as many ink-roll carrying arms as colors it printed.

In using the machine the operator, to adjust it to print the size required, should hold the tool in such a manner as to prevent the scroll-plate, B, from moving and then, by means of the key K (Fig. 10) whose projections, k , engage the holes, k' , on the back of the guide-plate, C, move that part in the direction of one of the arrows, to cause the slides to go "in" or "out," according to his requirements, until the finger, f'^x , points to the desired size on the graduated scale. Having thus set the machine, he should place it on the edge of the book, or other article to be printed upon, seeing that he begins in the correct place, which is indicated by the mark, s , and wheel the tool along, until it has made one revolution, which in the case of a book it would have done by the time the other edge was reached. It will be noticed that as the wheel is rotated the overlapping portions, or lifting plates, d^2 , of the letter-plate, d are caused to engage with the irregular cam surface, H, of all those inking rolls but the one which is to ink the letter to which it is attached, with the result that they are all lifted clear of the printing surface, but the one which supplies the right colored ink.

The modified form of expansible wheel shown in Figs. 11 and 12 consist of a disk or guide plate C and its letter slides D, of similar construction to that illustrated in Fig. 5 and a spring-plate R having as many radial arched spring arms r as there are letter slides, which is placed upon the boss T, after the washer t , and lastly the plate, P, is screwed onto the said boss T and completes this part. It will be found that by screwing the plate P farther into the boss T the arched springs r whose pointed ends enter corresponding holes in the letter slides, being straightened will have their outer ends forced to a greater distance from the center and so effect the expansion of the wheel; the washer, t , which is

borne upon by the inner ends of the radial spring arms, *r*, equalizing the pressure, caused by their straightening, at each end of the letter slides. The amount of expansion can be accurately gaged by the scale on the plate P which is used in conjunction with the mark *v* on one of the spring arms.

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. In an index printing implement, the combination of a holder provided with a handle, an expansible printing-wheel journaled in the holder and consisting of a disk provided with radiating guide-ways containing slides provided with projections *d*² and carrying letters or other characters, means for adjusting said slides, the arms N, O carried on the wheel holder and provided with downwardly bent ears, the inking rollers G mounted in said ears, and the cams H, one of which is formed on the lower end of one of the supporting ears of each inking roller, the said cams being each adapted to engage with the projections *d*² on the slides carrying the letters or characters that are not to be inked by the accompanying inking roll of that cam, to cause the said inking roll to be lifted clear of those letters, substantially as described.

2. In an index printing implement, the combination of an expansible printing-wheel car-

rying a number of radially arranged printing slides and having a scale by which the circumference of the printing surface may be accurately gaged, the ink rolls, and ink-roll carrying arms provided with cams adapted to cooperate with projections on the printing slides to lift the inking rolls clear from those characters or letters that are not to be inked by a particular roll, and thereby effect the printing in different prearranged colors, substantially as described.

3. In an index printing implement, the combination with the inking-rolls G, and cam devices carrying inking rolls of an expansible printing-wheel consisting of the disk C having radial guide-ways, the letter carrying slides D each provided on one side with a pin *d'*, and some of said slides having projections *d*² the scroll plate B having a spiral groove *b'* engaging said pins and provided with a boss *b* fitting a central opening in the disk C, the spring plate *f*, bolt L and holder M, substantially as described.

In testimony whereof I, the said EDGAR ALFRED GODDIN, have hereunto set my hand this 5th day of January, 1894.

EDGAR ALFRED GODDIN.

Witnesses:

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