

W. CHIPPERFIELD.

TYPE CARRIER.

APPLICATION FILED APR. 12, 1909.

955,849.

Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.

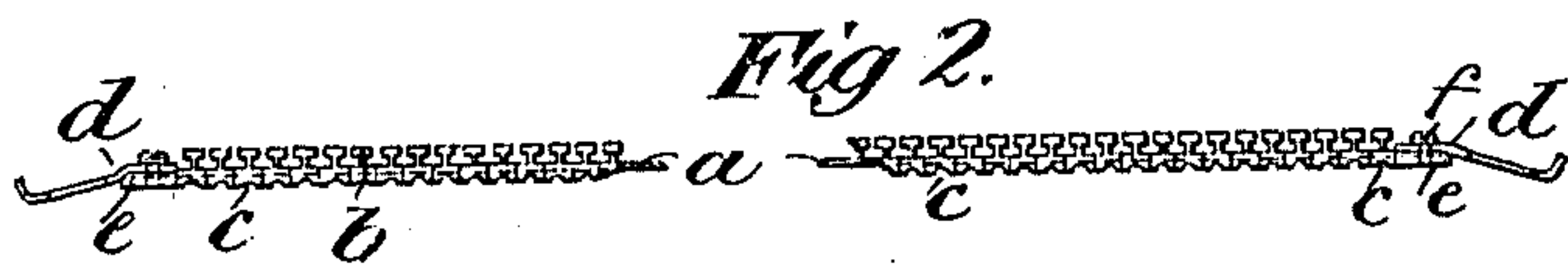
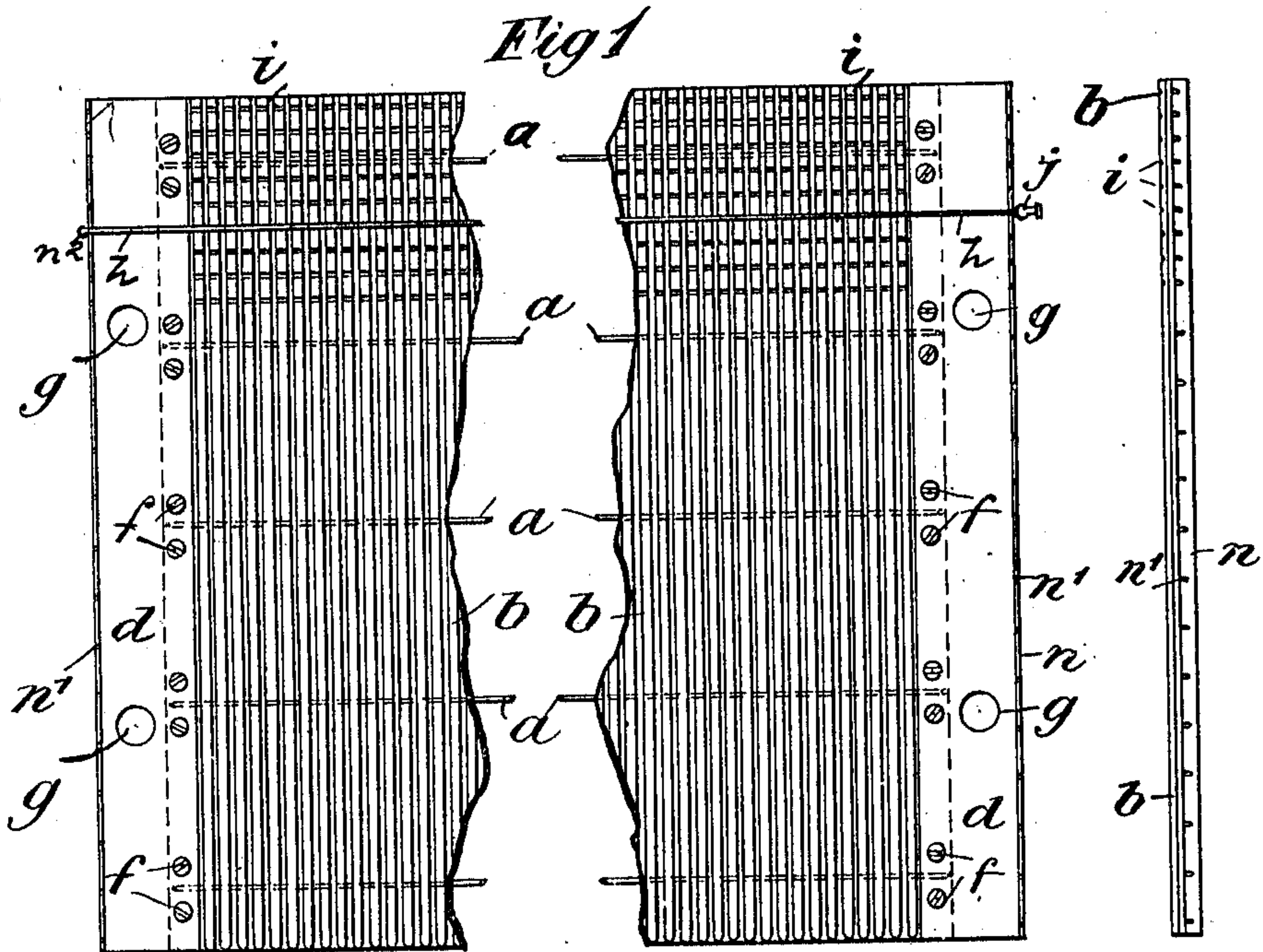
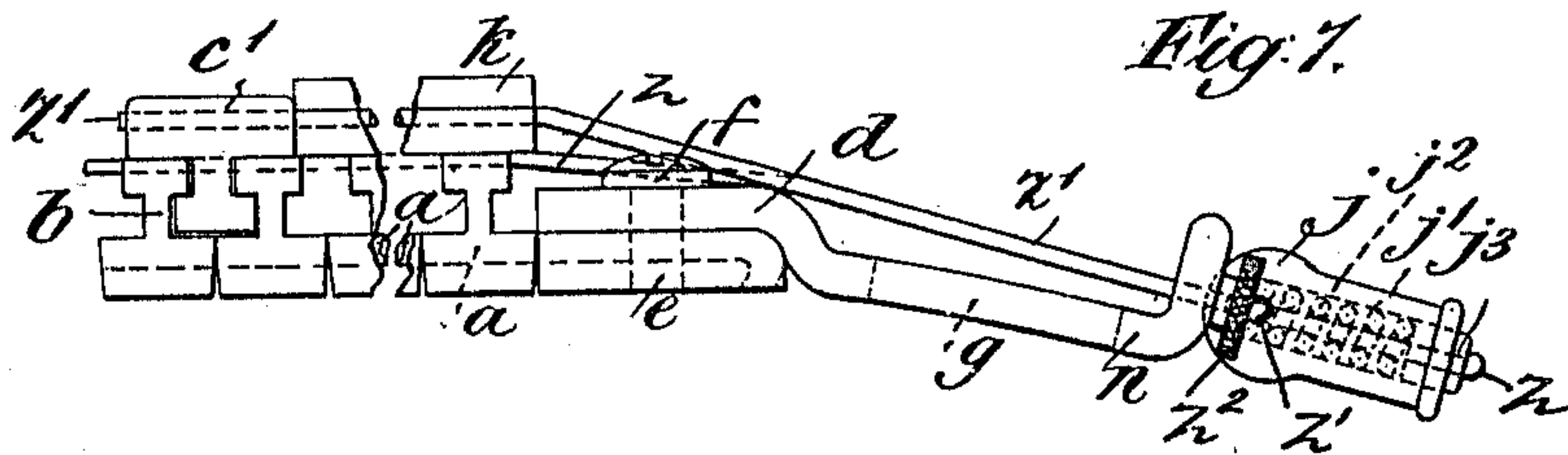
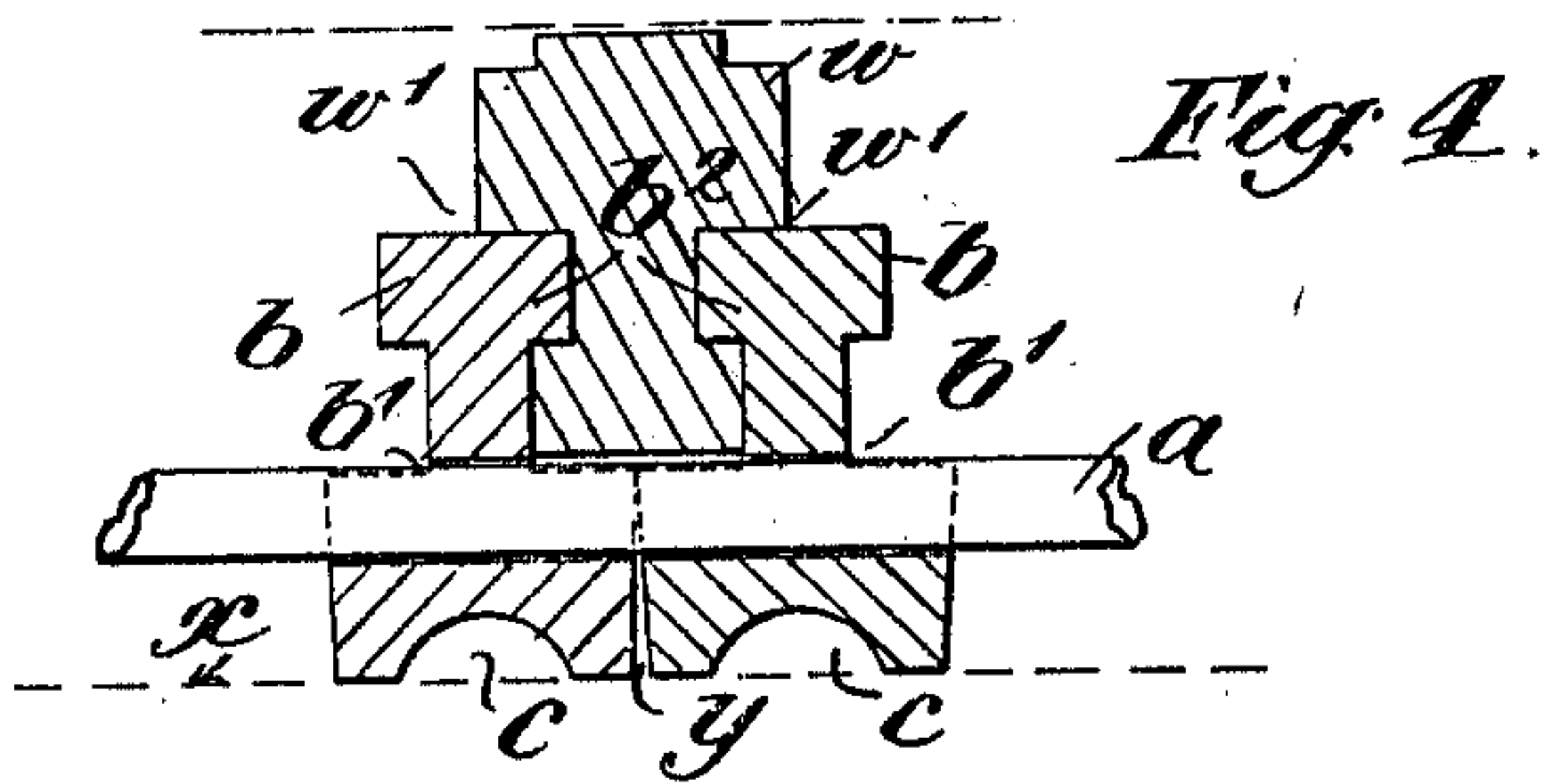


Fig. 3



WITNESSES

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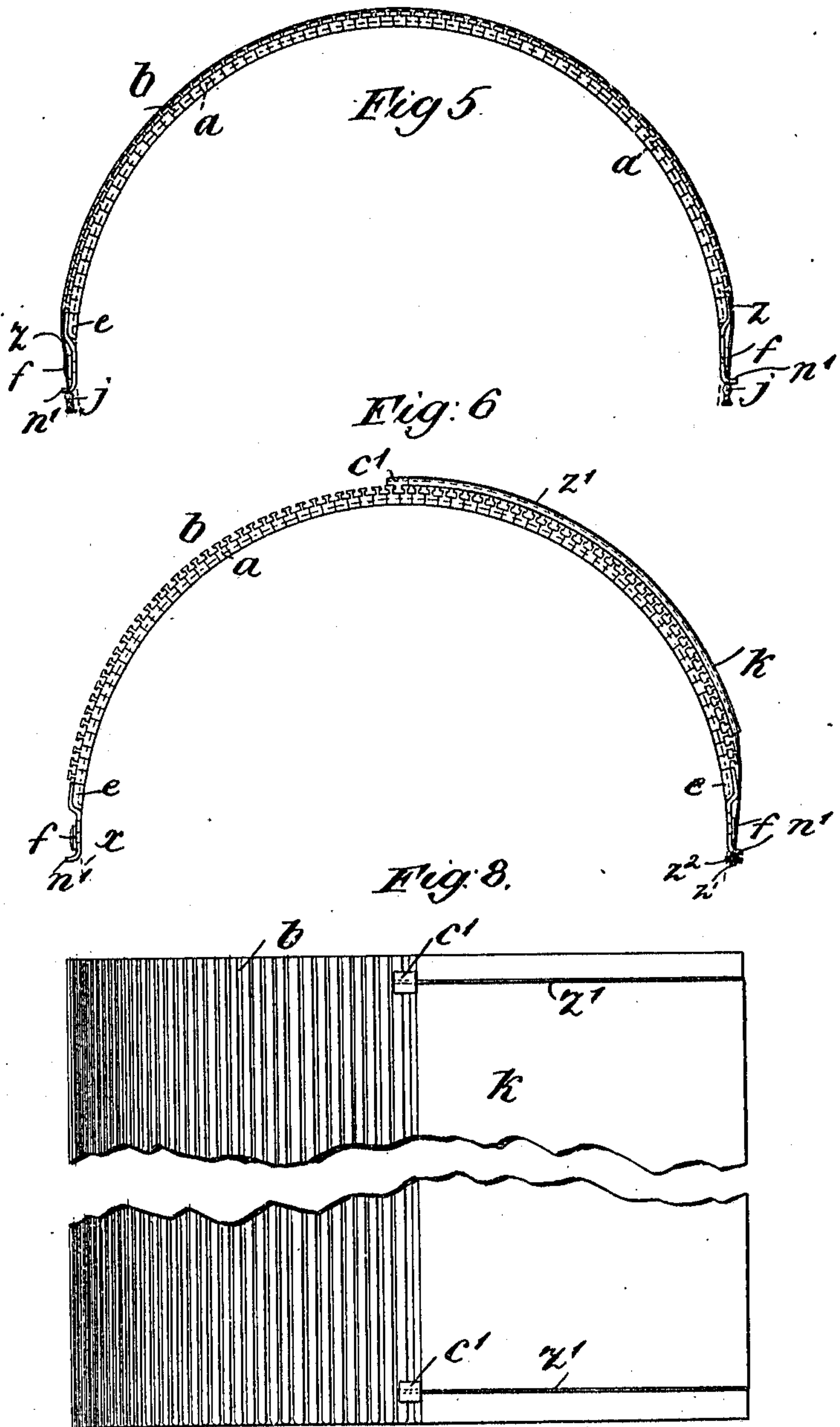
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WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER CHIPPERFIELD, OF ROMFORD, ENGLAND.

TYPE-CARRIER.

955,849.

Specification of Letters Patent.

Patented Apr. 26, 1910.

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To all whom it may concern:

Be it known that I, WALTER CHIPPERFIELD, subject of Great Britain, residing at Romford, Essex, England, have invented new and useful Improvements in Type-Carriers, of which the following is a specification.

This invention relates to an improved flexible type carrier or form for use in connection with printing and like machines and it refers to carriers of the class designed to be secured to a revoluble drum or cylinder and of such a character as to permit the ready removal or attachment of said carrier at the same time permitting it to be placed flat without the removal of the type. By this means the type may be conveniently retained in its "set up" condition when not in use upon the machine.

The present invention has for its object certain improvements in carriers or forms of this class whereby the general construction is greatly simplified, and it is possible to obtain considerable mechanical accuracy, whereby not only are the type carrying bars prevented from bulging when upon the machine with the type therein and arranged in what is known as "double line," but the sides of the type carrying bars are always in contact whether the carrier is upon the machine or removed therefrom and in a flat condition. By this means the entry and accumulation of dirt or other matter between the bars is prevented and the equal and proper spacing of the said bars is preserved.

The invention further embodies means for regulating the position of the ends of the different lines of type, so that the said ends are in alinement, such means also enables the distance of the ends of the lines from the edge of the paper to be regulated so that any desired margin may be provided.

The invention embodies various other improvements which are hereinafter fully described and set out in the claims.

In order that the invention may be the better understood, drawings are appended in which:—

Figure 1 is a plan of a flexible type carrier constructed in accordance with the present invention. Fig. 2 is a side view. Fig. 3 is an end view. Fig. 4 is a cross section to an enlarged scale showing two of the type carrying bars. Fig. 5 is a side elevation show-

ing the type carrier in position upon the drum of the machine. Fig. 6 is a similar view to Fig. 5, a stereotype plate however being shown upon the drum. Fig. 7 is a side view to an enlarged scale showing the ends of flexible bodies that may be employed to secure the stereotype plates to the carrier. Fig. 8 is a plan showing the method of securing the ends of flexible bodies when a stereotype plate is in use as in Fig. 6.

Referring to the accompanying drawings, *a* indicates a number of flexible bodies which in the present instance comprise tempered steel wires, so that while the carrier as a whole is exceedingly flexible, the flexible bodies are of a non extensible nature and there is no chance, when once they have been secured, of their length increasing. By this means the original spacing of the type carrying bars is preserved and there is no play between them.

b indicates type carrying bars perforated at various points of their length in order that they may be threaded upon the wires *a*. The arrangement of the wires is clearly shown in Fig. 4, on reference to which it will be noted that the perforations for the wire indicated by *b'* are so arranged that the upper portion of the circumference of the wire *a* is upon a level with, or slightly below, the surface of the bars *b* upon which the lower ends of the type rest. The type indicated by *w* Fig. 4 are of the usual cross sectional outline and are retained in the bars by means of the slots *w'* in the sides of said type with which engage the projections *b²* on the type bars *b*. As the correct positioning and regular alinement of the type is dependent upon the snugness with which the adjacent bars lie together, it can be readily understood that it is very desirable that the flexible body upon which the bars are strung should not be capable of any extension or stretch. Each of the bars *b* has provided upon its undersurface a longitudinal channel *c*, so that the base of the bar can take a firm and even bearing upon the curved surface of the drum of the machine and which drum is indicated by the line *x* in Figs. 4, 5 and 6.

In order that the radial displacement due to the movement of the individual type bars may be reduced to a minimum when the carrier is placed in a flat position or vice versa, I provide a slight clearance between

the adjacent lower edges of the lower portion of the bars as shown at y in Fig. 4. On reference to this figure, it will be seen that the point of contact between the bars b when the carrier is upon the drum x , and consequently curved to agree with the contour of the said drum, is at a point above the base of the bars, and is in fact at a point approximately even with the surface of the bar upon which the base of the type rests. By this means it will be evident that the circumferential movement that takes place at the portion of the bar farthest away from the surface of drum x is reduced to a minimum and consequently the bending or straightening of the carrier as a whole has little or no practical effect so far as the pitch of the bars is concerned, nor does it appreciably increase the area of the type ways.

The wires or other flexible bodies a are at each end secured and this may be effected by bending the end at a right angle, and after being drawn taut so that the bars b lie tightly together, the ends are clamped between the two plates d e which plates are secured together by means of screws f . Holes g are provided in the plates which are engaged by studs, pins or any of the usual devices employed for securing forms of this class upon the drum x . In order that the margin may be determined I may provide an extension n which is formed on the end of plate d on the carrier. This extension is bent at a right angle upward at its outer end and provided with a series of recesses n' . The bars b are also provided with recesses upon their outer surfaces as shown at i Figs. 1 and 3 and in order to permit the type to be accurately alined, a wire or other flexible body, z , is laid in the grooves which are of sufficient depth to contain the wire so that the outer portion of its periphery does not project above the general plane of the type bar as shown in Fig. 7 and secured at each end to the extension n . The grooves n' in addition to serving as a guide for the proper alinement of the wire z also serve to secure the wire with sufficient firmness to prevent its displacement when the type is pressed against it. The wire thus forms a rigid abutment for the type and not only permits its proper alinement as aforesaid, but it prevents its displacement at that end of the line. For the purpose of effecting the desired connection to the carrier, one end of the wire may be provided with a suitable head n^2 , which prevents the withdrawal of the end through the slot n' , while the opposite end is provided with a device comprising a sleeve j through which the wire passes and which has an enlarged bore at j' in which is disposed a spring, j^2 , encircling the end of the wire, a nut or other device j^3 being provided upon the end of the said

wire against which the end of the spring bears. The arrangement just described will be readily understood on reference to Fig. 7. As the end of sleeve j abuts against the outer surface of the turned up portion of plate d , it follows that the strain upon the wire or other flexible body z will act upon the spring j^2 which thus provides the necessary elasticity in order to permit the desired increase of the effective length of the wire when the carrier is bent around the drum x , and at the same time it keeps the wire taut when the form is removed and straightened. Obviously instead of a head n^2 as above described, I may provide both ends of wire z with an elastic connection such as that just described, see Fig. 5. In order to permit the use of a stereotype or like plate in conjunction with the type, I may employ wires or the like z' which are arranged in the manner just described and which wires are disposed within suitable grooves formed in the face of the plate. The arrangement is shown in Figs. 6, 7, and 8 in which the stereotype or like plate is indicated by k and as shown the said plate rests upon the bars b being secured against displacement by the wires or the like z' having nuts z^2 at the outer end and arranged in the manner shown in Fig. 7.

Where a short plate is employed, I prefer to use shorter wires or the like such as z' , one end of which is provided with a compensating device of the nature previously described, and attached to the other end of said wire is a button or other body adapted to be engaged with the type way as shown in Figs. 6, 7 and 8 at c' .

Obviously instead of employing a compensating device for taking up the slack of the wires z , or z' , I may employ the nut z^2 tapped on to the end of the wires and which nut is screwed up or slacked as may be requisite.

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 flexible type carrier comprising a number of type carrying bars threaded freely upon flexible bodies, rigid means for securing the ends of said bodies, means for alining the type in the carrier and means for securing it to the machine.

2. A flexible type carrier comprising a number of type carrying bars threaded upon flexible bodies, longitudinal grooves upon the underside of said bars, plates securing the ends of said flexible bodies and means for alining the type in the carrier, and means for securing it to the machine.

3. A flexible type carrier comprising a number of type carrying bars threaded upon flexible bodies, longitudinal grooves upon the underside of the bars, said bars having a

clearance between their inner adjacent extremities, plates between which the ends of the flexible bodies are clamped, means for alining the type in the carrier and means for securing it upon the machine.

4. A flexible type carrier comprising a number of type carrying bars threaded upon flexible bodies, longitudinal grooves in the underside of the bars and a clearance between the inner adjacent extremities of the bars, plates securing the ends of the flexible bodies and a means for alining the type in the form comprising a flexible body engaging grooves in the upper surface of the type bars, said body being provided with means whereby it may be secured at its ends to the carrier and means for securing the carrier on the machine.

5. A flexible type carrier comprising a number of type carrying bars threaded upon flexible bodies, longitudinal grooves upon the underside of said bars, and a clearance at the lower adjacent extremities of said bars, plates securing the ends of said flexible bodies, means for alining the type within the carrier comprising a flexible body engaging grooves within the upper surface of the type carrying bars, an extension upon the ends of the carrier, grooves in said extension for engaging the type alining body, and a head at the inner end of said body and a screw thread and nut at the other end of said body, and means for securing the carrier to the machine.

6. A flexible type carrier comprising a number of type carrying bars threaded upon flexible bodies, longitudinal grooves upon the underside of said bars and a clearance between the lower adjacent extremities of said bars, plates securing the ends of the flexible bodies, means for alining the type within the carrier comprising a flexible body engaging grooves upon the outer surface of the type carrying bars, an extension on the ends of the carrier, grooves in said extension for engaging the type alining body, a head at the inner end of said body and an extensible body at the outer end of said flexible body, means upon said outer end for securing it against withdrawal from the slots in the extension on the carrier and means for securing the carrier to the machine.

7. A flexible type carrier comprising a number of type carrying bars threaded upon flexible bodies, longitudinal grooves upon the underside of said bars and a clearance between the lower adjacent extremities of said bars, plates securing the ends of the flexible bodies, means for alining the type within the carrier, comprising a flexible body engaging grooves upon the outer surface of the type carrying bars, an extension on the ends of the carrier, grooves in said extension for engaging the type alining body, a head at the inner end of said body and an elastic

body at the outer end of said body, means upon said outer end for securing it against withdrawal from the slots in the extension on the carrier and means for securing the carrier to the machine.

8. A flexible type carrier comprising a number of type carrying bars threaded upon flexible bodies, longitudinal grooves upon the underside of the bars and a clearance at the lower adjacent extremities of said bars, plates for securing the ends of said flexible bodies, means for alining the type in the carrier comprising a flexible body engaging grooves in the upper surface of the type bars, extensions on the carrier, grooves in said extensions for engaging the type alining body, and a nut at each end of said body, each nut bearing upon a spring contained within a sleeve, said sleeve bearing at its inner end against the outer surface of the end of the extension on the carrier and means for securing the carrier to the machine.

9. A flexible type carrier comprising flexible bodies, a number of type carrying bars threaded upon said bodies, said bars having longitudinal grooves upon their underside and a clearance of the lower adjacent extremities of the said bars, plates securing the ends of said flexible bodies, means for alining the type in the carrier comprising a flexible body engaging grooves in the upper surface of the type bars, extensions on the carrier having grooves therein for engaging the type alining body, and a nut at each end of said body, a spring bearing against the nut, a sleeve carrying said spring, said sleeve bearing at its inner end against the outer surface of the end of the extension on the carrier, means for securing the carrier to the machine and flexible bodies for securing a stereotype plate upon the type carrying bars.

10. A flexible type carrier comprising a number of type carrying bars, flexible bodies upon which the bars are threaded, said bars having longitudinal grooves upon their underside, and a clearance at the lower adjacent extremities of the said bars, plates securing the ends of said flexible bodies, means for alining the type in the carrier comprising a flexible body engaging grooves in the upper surface of the type bars, extensions on the carrier having grooves therein for engaging the type alining body, and a nut at each end of said body, a spring bearing against each nut, a sleeve for the spring, said sleeve bearing at its upper end against the outer surface of the end of the extension on the carrier, means for securing the carrier to the machine and flexible bodies for securing a stereotype plate upon the type carrying bars, said flexible bodies, at their inner ends, having means engaging the typeways in the bars and a nut at the other end of

each bar whereby said ends are retained in a slot on the carrier.

11. A flexible type carrier comprising flexible bodies, a number of type carrying bars threaded freely on said flexible bodies, means for securing the ends of said bodies, rigid means for alining the type in the carrier, means for securing the carrier to the machine, and means for securing a stereo-
10 type plate upon the type bars.

12. A flexible type carrier comprising flexible bodies, a number of type carrying bars threaded freely upon said flexible bodies, means for securing the ends of said
15 bodies, rigid means for alining the type in the carrier, means for securing the carrier to the machine, and flexible means for securing a stereotype upon the type bars.

13. In a flexible type carrier the combination with a number of perforated type bars threaded upon a flexible body, means for securing the ends of said flexible bodies, and means for securing the carrier to the machine, of independent flexible bodies having
25 ing means at one end for engaging the type ways in the bars and at the other provided

with a spring and means for connecting it to the end of the carrier.

14. A flexible type carrier comprising a number of perforated type carrying bars threaded upon flexible bodies, said type carrying bars having a cross section such that the inner portions present a tapering outline and means for securing the carrier to the machine.
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15. A flexible type carrier comprising a number of perforated type carrying bars threaded upon flexible bodies, said bars having a cross sectional outline such that the points of contact between the adjacent faces
40 of the bars are situated above the base, means for securing the ends of the flexible bodies and for securing the carrier to the machine.

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

Witnesses:

GEO. J. B. FRANKLIN,
W. J. NORWOOD.