

No. 656,303.

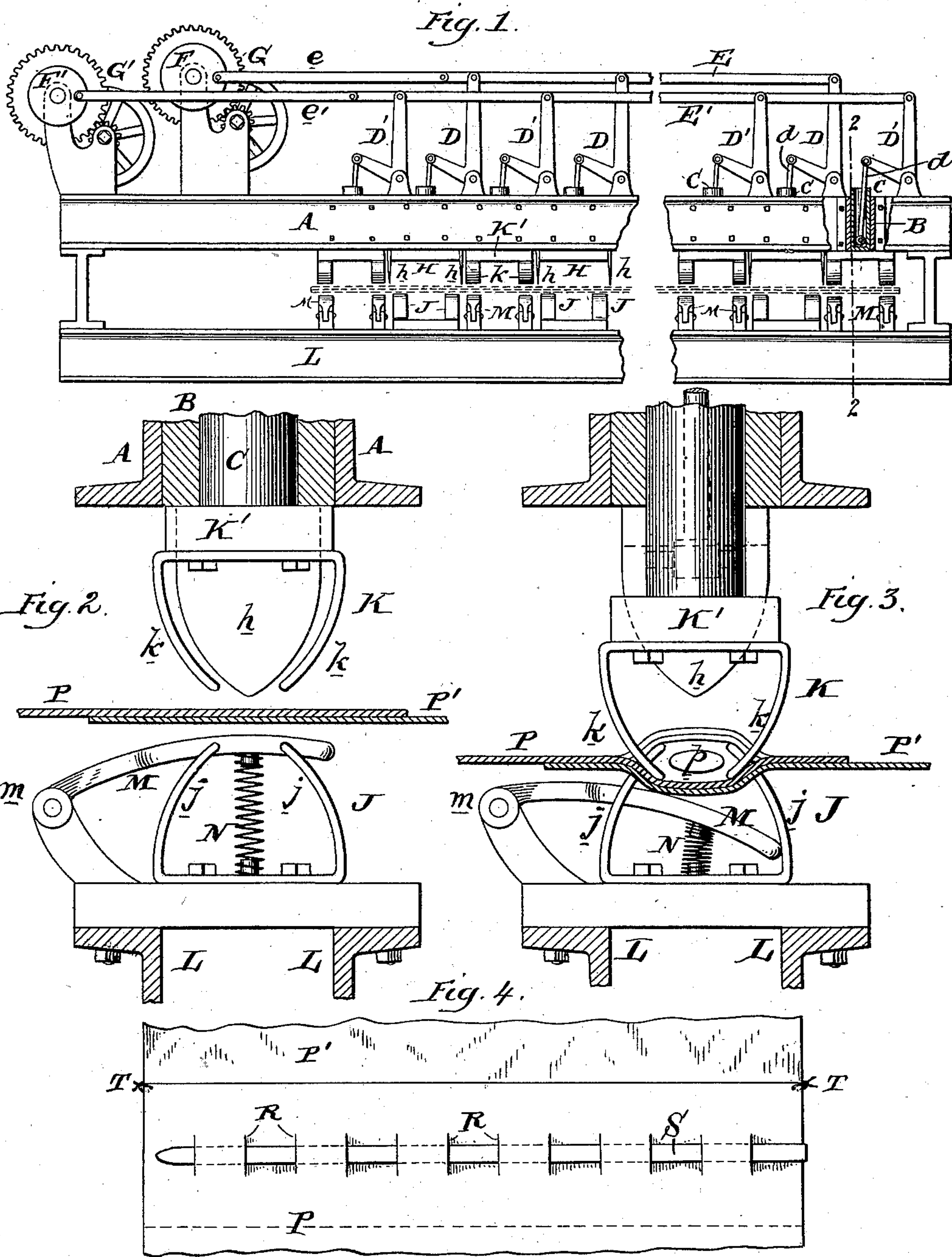
Patented Aug. 21, 1900.

G. K. RICH.

MACHINE FOR CONNECTING WEBS OF FABRICS.

(Application filed May 31, 1900.)

(No Model.)



Witnesses
H. B. Hallock.
R. M. Kelly.

Fig. 5.

Inventor.
George K. Rich
By *[Signature]* Atty.

UNITED STATES PATENT OFFICE.

GEORGE K. RICH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
THE FARR & BAILEY MANUFACTURING COMPANY, OF CAMDEN,
NEW JERSEY.

MACHINE FOR CONNECTING WEBS OF FABRICS.

SPECIFICATION forming part of Letters Patent No. 656,303, dated August 21, 1900.

Application filed May 31, 1900. Serial No. 18,552. (No model.)

To all whom it may concern:

Be it known that I, GEORGE K. RICH, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improve-
5 ment in Machines for Connecting Webs of Fabrics, of which the following is a specification.

My invention has reference to machines for connecting webs of fabrics together; and it
10 consists of the improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

Heretofore it has been customary to connect two long webs of linoleum together so
15 as to cause the end of one web to draw the beginning of the other web through the coloring-machine and drying-chamber by overlapping the two ends and sewing them together
20 by hand. This caused great loss of time, and hence was objectionable in that it required the other workmen to remain idle until the sewing was completed, and, secondly, kept the apparatus out of operation for a considerable
25 period.

The object of my invention is to overcome these objections by providing a suitable apparatus which shall enable the two ends of the web to be temporarily united in a speedy
30 manner and also capable of quick separation after the drying process has been completed and the printing operation to begin.

My improved machine may be incorporated with the machine commonly used for applying the coloring-pigment to the back of the
35 web or it may be used separately, as desired.

My improvements consist of a series of stabbing-knives which are caused to perforate the overlapped webbing, a series of
40 former-jaws below the webbing to raise the webbing between every other pair of perforations, and a series of movable former-jaws intermediate of the lower former-jaws and located above the webbing, said last-mentioned
45 former-jaw being adapted to be depressed so as to depress the webbing between the raised portions, thus forming a series of upward loops and downward loops arranged alternately, through which is thrust a needle or

rod which, in effect, laces the two webs together. The apparatus may have spring-actuated lifting shoes or arms which permit the depression of the web under the action of the depressing former-jaw, but raise the web and
50 needle clear of the lower former-jaw when the pressure of the upper former-jaw is removed. 55

My invention also comprehends various details of construction, all of which will be better understood by reference to the drawings, 60 in which—

Figure 1 is a front elevation, with part broken away and part in section, of a machine embodying my improvements. Fig. 2
is a cross-section of same on line 2 2 with the
65 perforating or stabbing blades and upper forming-jaws elevated prior to operating upon the fabric. Fig. 3 is a similar section showing the parts in position during the process of uniting the webbing. Fig. 4 is a plan view
70 of the completed joint formed between the two ends of the webbing. Fig. 5 is an elevation of the united webbing looking toward one edge.

A is an upper and L a lower frame between
75 which the webs of fabric P P' are caused to pass. The upper frame A is provided with a series of vertical guides B, in which plungers C are guided and adapted to a vertical reciprocation. Every alternate plunger is connected to a bell-crank lever D by a connecting-rod d, and the remaining alternate plungers are similarly connected to a second set
80 of bell-cranks D'. The free arms of the bell-crank D are hinged to a horizontal operating-bar E, and similarly the free arms of the bell-cranks D' are hinged to a bar E'. The ends
85 of these bars E and E' are respectively connected by links e e' with the cranks F F', which are adapted to be rotated by hand-power devices G G'. By this means either
90 set of plungers may be reciprocated at will. The lower ends of the plungers corresponding to the bell-cranks D are provided with heads H, on the ends of which are secured in
95 parallel arrangement two pointed stabbing-blades h h, which may be forced down to perforate the webs of fabric in parallel slits, as

shown at R in Fig. 4. Secured to the other ends of the other plungers operated by the bell-cranks D' are heads K', which carry on their under sides the two depressing former-jaws K, each of which consists of fixed inward fingers *k k*, which approach but do not meet each other, the object of which is to depress the fabric intermediate of the two slits made by the stabbing-blades *h*. Similar former-jaws J, formed of fingers *j j*, are secured to the lower frame L and point upward between and below each pair of blades *h* and their head H, the object of which is to raise those portions of the webbing between the slits R which are below the heads H and alternate of the portions acted upon by the former-jaws K.

M shows a series of hinged lifting arms or shoes hinged to the lower frame at *m* and pressed upward by springs N of any suitable construction, the object of which is to raise the webs of fabric clear of the lower former-jaws J when the upper jaws and blades are raised, so as to cause them to travel free of said lower former-jaws.

The operation of my apparatus will now be understood. Applying this structure to the well-known linoleum-machine for applying coloring-pigment to the back of the web, the operation would be as follows: When the web P' has almost passed through the coloring-machine and is still between the jaws of the machine above described, the beginning of the next web P to be treated is overlapped upon the end of the first-mentioned web, being placed either above or below, as may be desired, and the two webs in that relation being caused to pass into a position between the former jaws, as shown in Fig. 2. To facilitate this moving of the two webs into position, they may be temporarily connected at opposite edges by a couple of stitches T, Fig. 5. When brought to the position shown in Fig. 2, the hand-power G is operated and the stabbing-blades *h h* forced through the webbing, making a series of parallel slits R. The hand-power G' is next operated and depresses the former-jaws K, which depress every alternate part of the webbing between the slits R, while the lower former-jaws J raise the other alternate parts. The spring-arms M are also depressed by the action of the former-jaws K. The stabbing-blades *h* are then raised clear of the webbing and the parts are in the position shown in Fig. 3. This insures a longitudinal passage *p*, extending transversely through the webbing below and above alternate portions of the said webbing between the slits R. Into this passage-way is thrust a bar of wood or iron S, preferably oblong in cross-section. When this is done, the former-jaws K are raised and the spring-arms M lift the webbing clear of the former-jaws J and allow it to be again fed through the machine, the second web P being pulled forward by the first web P'. By making the former-jaws with the open spaces between the fingers *j*

and *k* it is evident that these jaws may separate without catching upon the bar or rod S.

I do not confine myself to the employment of my apparatus for any special manufacture, although I have found it especially well adapted for uniting webbing in linoleum manufacture. Neither do I limit myself to any size of the machine, as the proportion of the parts would vary to suit the industry to which it is adapted. While I prefer the general constructions herein set out, the details may be greatly varied without departing from the essential features of my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for temporarily connecting the two ends of two pieces of webbing, the combination of cutting devices for forming through the overlapped webs a series of parallel slits, with two sets of former-jaws adapted to operate upon the webs from opposite sides one set of former-jaws acting upon the webbing between every alternate pair of slits and the other set acting upon the remaining portions between said slits, whereby the alternate portions are pushed in opposite directions to form a transverse passage-way through which a locking bar or rod may be passed.

2. In a machine for temporarily connecting the two ends of two pieces of webbing, the combination of cutting devices for forming through the overlapped webs a series of parallel slits, with two sets of former-jaws adapted to operate upon the webs from opposite sides one set of former-jaws acting upon the webbing between every alternate pair of slits and the other set acting upon the remaining portions between said slits, whereby the alternate portions are pushed in opposite directions to form a transverse passage-way through which a locking bar or rod may be passed and automatic lifting devices for supporting the webbing clear of the former-jaws when they are separated.

3. In a machine for temporarily connecting the two ends of two pieces of webbing, the combination of cutting devices for forming through the overlapped webs a series of parallel slits, with two sets of former-jaws adapted to operate upon the webs from opposite sides one set of former-jaws acting upon the webbing between every alternate pair of slits and the other set acting upon the remaining portions between said slits, whereby the alternate portions are pushed in opposite directions to form a transverse passage-way through which a locking bar or rod may be passed the said two sets of former-jaws having their operating ends pointing in opposite directions and consisting of inwardly-directed fingers or operating parts separated at their free ends.

4. In a machine for temporarily connecting the ends of two webs of fabric consisting of two main frames arranged so as to have a

space between them through which the webs may be passed, a series of reciprocating stabbing-blades carried by one of the frames and adapted to perforate the webs in a series of parallel slits, a series of stationary former-jaws on the other frame adapted to operate upon the web between every alternate pair of slits, a reciprocating series of former-jaws carried by the frame supporting the stabbing-blades and adapted to act upon the webbing between the alternate pairs of slits unacted upon by the other series of jaws and from the opposite side thereof, and devices for operating the stabbing-blades and reciprocating former-jaws.

5. In a machine for temporarily connecting the ends of two webs of fabric consisting of two main frames arranged so as to have a space between them through which the webs may be passed, a series of reciprocating stabbing-blades carried by one of the frames and adapted to perforate the webs in a series of parallel slits, a series of stationary former-jaws on the other frame adapted to operate upon the web between every alternate pair of slits, a reciprocating series of former-jaws carried by the frame supporting the stabbing-blades and adapted to act upon the webbing between the alternate pairs of slits unacted upon by the other series of jaws and from the opposite side thereof, spring-supports for the webbing carried by the same frame with the stationary jaws and located in alignment with the reciprocating former-jaws, and independent devices for operating the stabbing-blades and reciprocating former-jaws.

6. In a machine for temporarily connecting the ends of two webs of flexible material, the combination of the main frame A L, a series of guides B secured to the frame A, reciprocating plungers movable in said guides, a series of bell-cranks D connected with and operating alternate plungers, a series of bell-cranks D' connected with and operating the remaining plungers, separate devices for rocking each series of bell-cranks D and D' independently, stabbing-blades *h, h* connected to the set of plungers operated by the bell-cranks D, depressing former-jaws K connected to and operated by the other set of plungers actuated by the bell-cranks D', and fixed former-jaws

J secured to the frame L below the spaces intermediate of each two stabbing-blades taken as pairs and occupying spaces intermediate of the depressing former-jaws K.

7. In a machine for temporarily connecting the ends of two webs of flexible material, the combination of the main frame A L, a series of guides B secured to the frame A, reciprocating plungers movable in said guides, a series of bell-cranks D connected with and operating alternate plungers, a series of bell-cranks D' connected with and operating the remaining plungers, separate power devices for rocking each series of bell-cranks D and D' independently, stabbing-blades *h, h* connected to the set of plungers operated by the bell-cranks D, depressing former-jaws K connected to and operated by the other set of plungers actuated by the bell-cranks D', fixed former-jaws J secured to the frame L below the spaces intermediate of each two stabbing-blades taken as pairs and occupying spaces intermediate of the depressing former-jaws K, and a series of spring-actuated pivoted arms M for lifting the webs clear of the former-jaws J arranged below the former-jaws K.

8. In a machine for temporarily connecting the two ends of two pieces of webbing, the combination of cutting devices for forming through the overlapped webs a series of parallel slits, with two sets of former-jaws adapted to operate upon the webs from opposite sides one set of former-jaws acting upon the webbing between every alternate pair of slits and the other set acting upon the remaining portions between said slits, whereby the alternate portions are pushed in opposite directions to form a transverse passage-way through which a locking bar or rod may be passed and means independent of the two sets of jaws for raising the webbing clear of both sets of former-jaws when they are moved relatively apart.

In testimony of which invention I have hereunto set my hand.

GEORGE K. RICH.

Witnesses:

R. M. HUNTER,
J. W. KENWORTHY.