

No. 674,960.

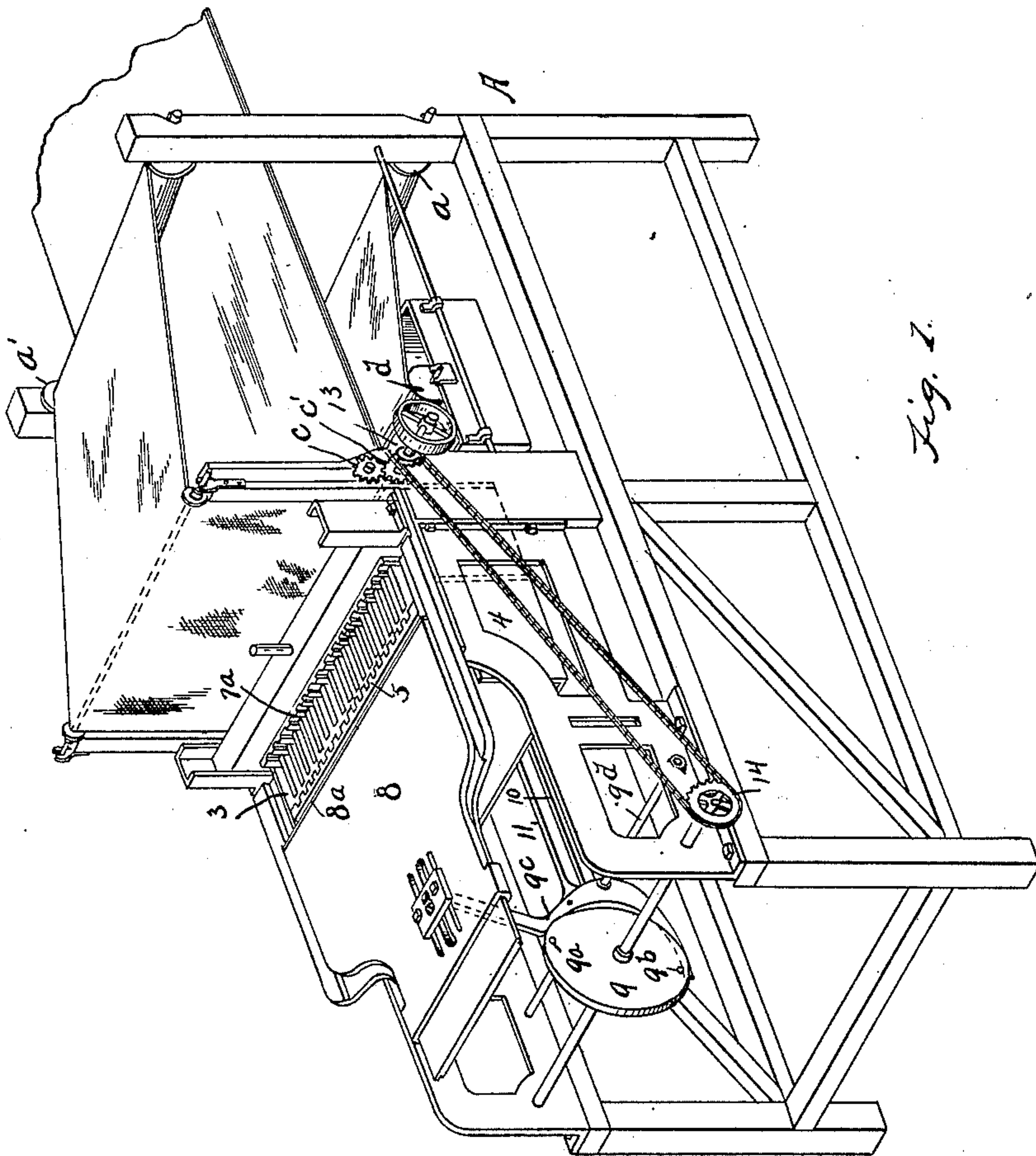
Patented May 28, 1901.

A. COLTON.
MACHINE FOR MAKING DRESS STAYS.

(Application filed Aug. 6, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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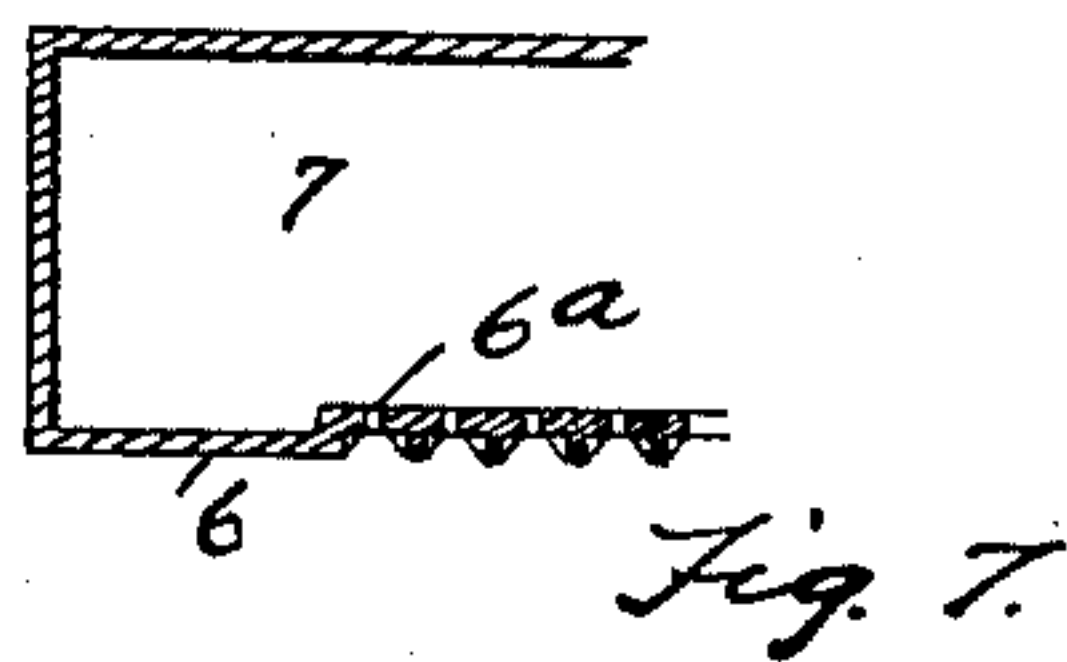
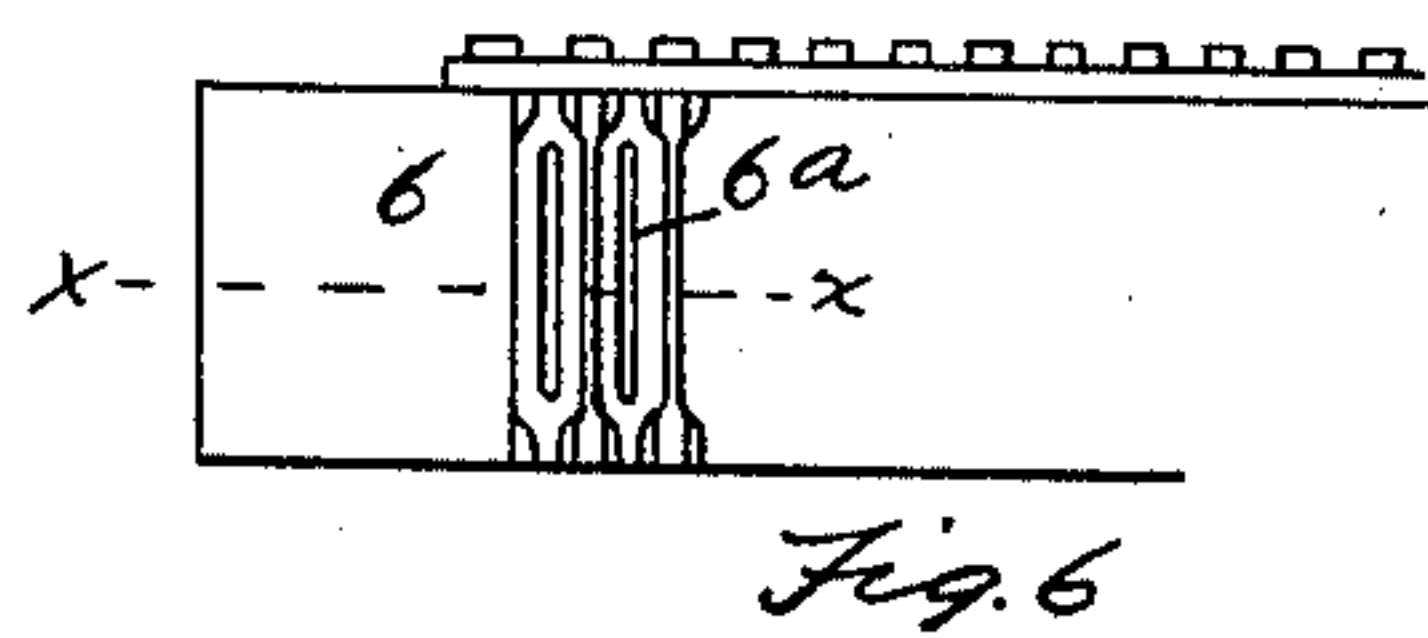
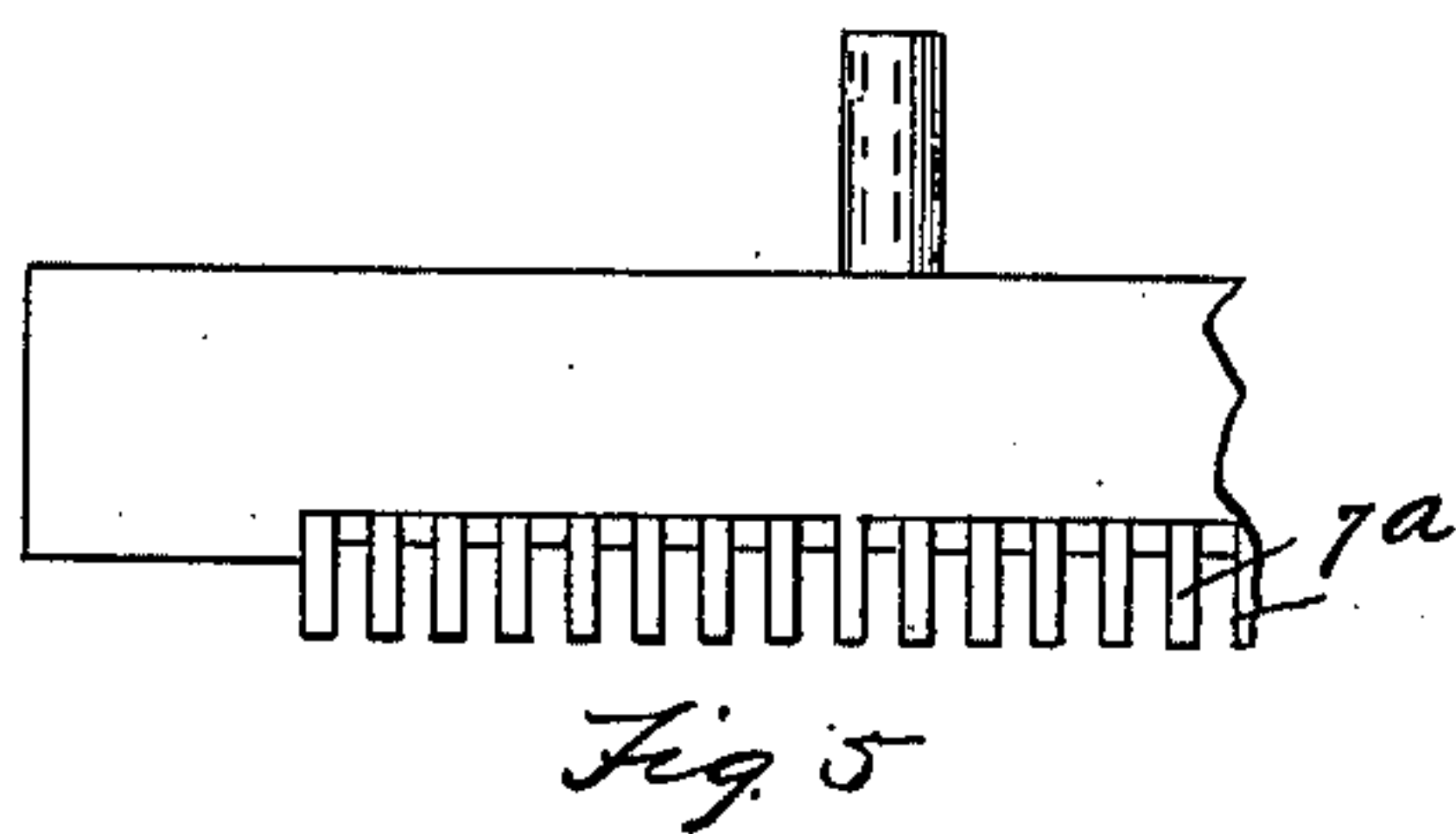
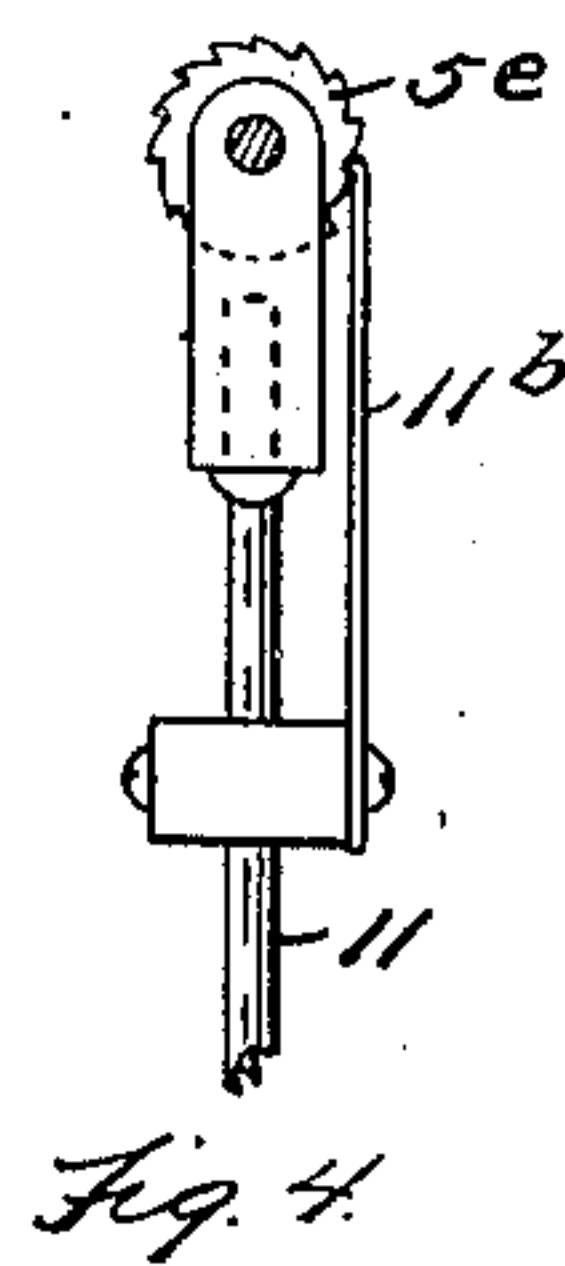
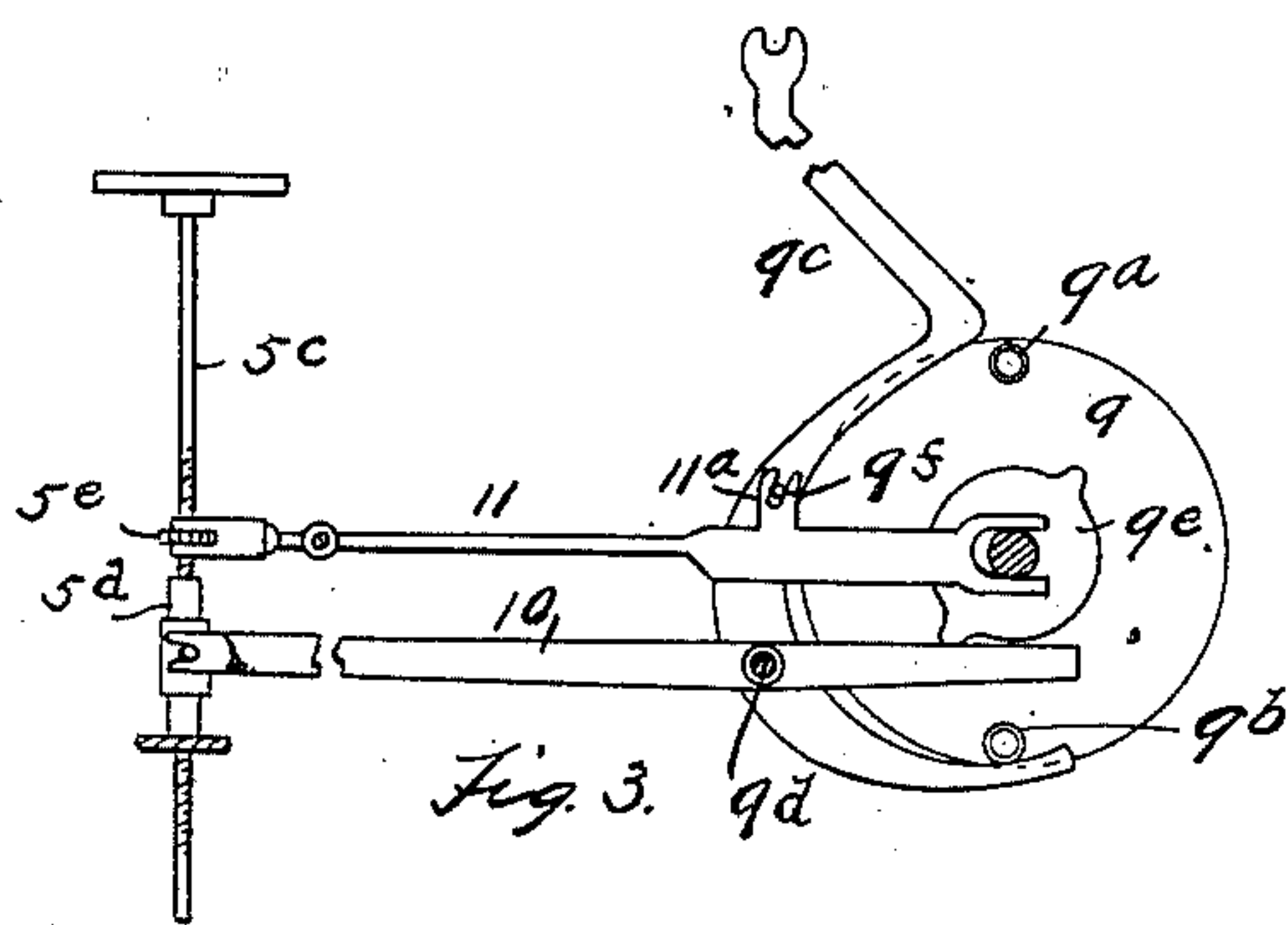
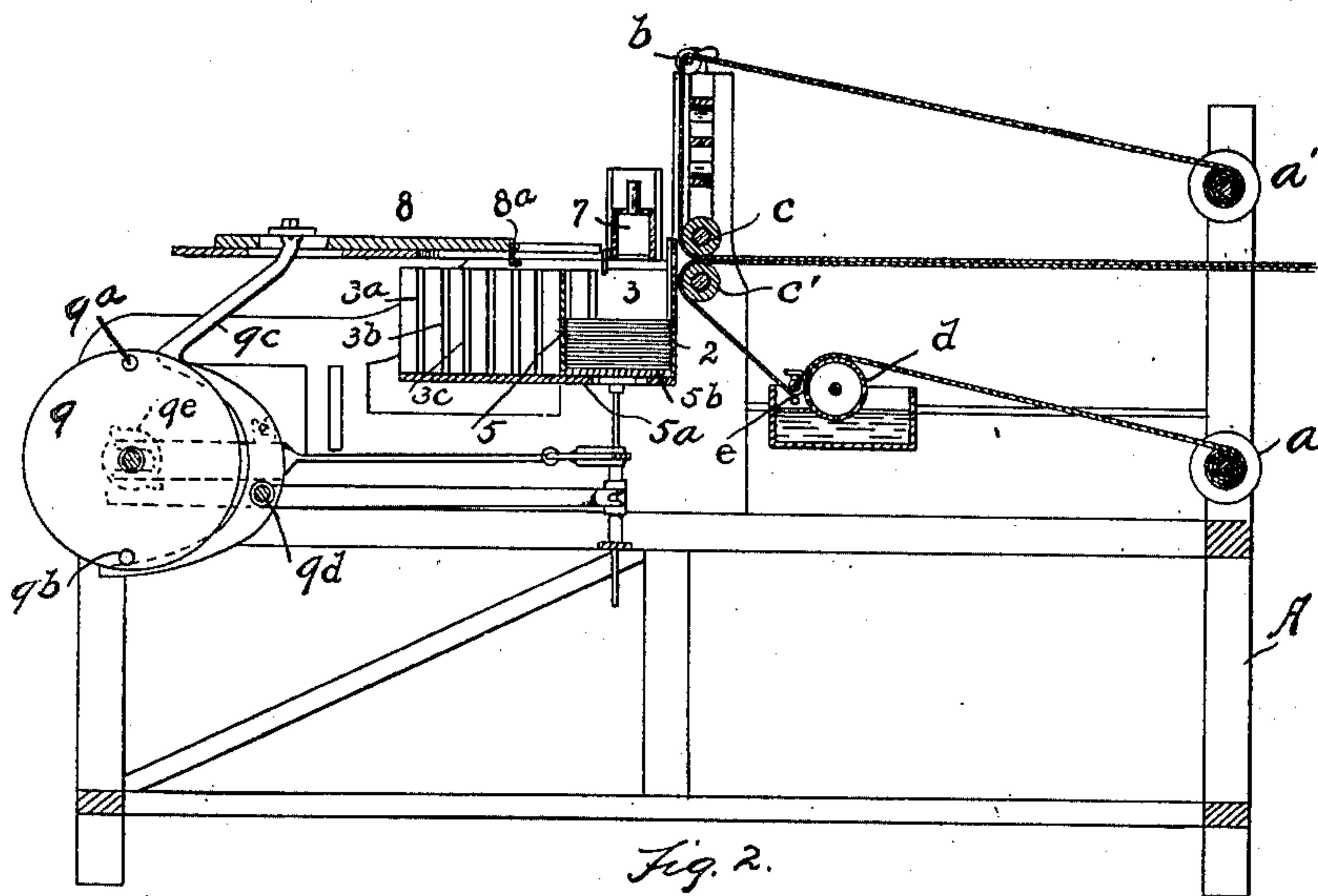
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(Application filed Aug. 6, 1900.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

ARTHUR COLTON, OF DETROIT, MICHIGAN.

MACHINE FOR MAKING DRESS-STAYS.

SPECIFICATION forming part of Letters Patent No. 674,960, dated May 28, 1901.

Application filed August 6, 1900. Serial No. 25,997. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR COLTON, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Dress-Stay Machines; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to the manufacture of dress-stays, and has for its object an improved machine adapted to place between continuously-moving sheets of cloth or fabric the strips of steel which form the resilient part of a dress-stay.

In the drawings, Figure 1 shows the machine in perspective. Fig. 2 is a vertical longitudinal section. Fig. 3 is a detail of the parts which are employed to lift the wires into the path of a plunger that forces them into place between sheets of cloth. Fig. 3 also shows the crank which actuates the plunger. Fig. 4 is a detail of the feed mechanism arranged to lift the bundle of steel wires. Figs. 5, 6, and 7 are details of a pneumatic device employed to catch and hold the uppermost wire of a bundle of wires, holding it in the path of the plunger which pushes it to place.

A indicates the framework, on which are journaled feed-rolls a a' for fabric. From the feed-roll a' the fabric is carried over a sheave-roll b and down under a pressure-roller c , and thence back for any suitable distance to a place of storage. The fabric for the storage-roll is fed over a glue-spreading roll d and between scraping-rods e and around a pressure-roll c' , that squeezes the cement-covered fabric against the face of the fabric coming from the storage-roll a' . The two sheets of fabric, with the steels which have been inserted between them, are carried back together, dried, and subsequently treated to separate the individual stays one from another.

The mechanism by means of which the steels are inserted between the moving sheets of fabric forms the principal object of this invention and is shown in detail in Fig. 2. Across the frame, immediately in front of and below the

pressure-rollers c and c' , is arranged a deep box. The end wall of the box which lies next to the roll c' is a fixed piece 2. The side walls 3 and 4 are also fixed, but are provided on their inner side with a number of vertical grooves 3^a 3^b , &c. That wall which is farthest removed from the roller c' is a movable piece 5, that may be inserted at will in any of the vertical grooves, so that the receptacle formed between the side walls 3 4 and the front and back walls 2 5 may be varied to accord with the length of the steel which is to be used. Under the receptacle is a fixed bottom 5^a , and above the fixed bottom a false bottom 5^b . The fixed bottom 5^a is slotted, so that the stem or support on which the false bottom rests and which actuates the false bottom can engage with it. Forming a part of the top covering of the receptacle for the wires and also the bottom of the exhaust-chamber 7 is a plate 6, provided with a number of openings 6^a , each one of which is about the width of or a little narrower than the width of the steel wire to be treated and some inches long. It should be slightly shorter than the shortest of the wires to be treated. Underneath the openings and near each end of each opening is a notch, wider at its lower side than at the upper side or bottom of the notch. The object of the notch is to provide for the seating of the stay-wire, so as to cover the opening 6^a . Above the plate 6 is an exhaust-chamber 7. This exhaust-chamber 7 is a box arranged to engage tightly over the upper surface of the plate 6, making an air-tight joint therewith. The front side, or the side farthest from the roll c of the exhaust-chamber 7, is provided with hanging spacers, that project into the wire-receptacle on the hangers 7^a and serve to space the piles of wire and to guide them to proper register with the holes 6^a . Above the receptacle is a sliding plunger 8, provided with a number of fingers 8^a , that engage between the hangers 7^a . During the operation of the machine the plunger is reciprocated and drawn back until the extreme ends of the fingers 8^a are retracted beyond the ends of the wires of the wire-receptacle, and after a wire has been lifted into the path of the plunger the plunger advances and forces the wire between the moving fabric.

The plunger is actuated by a cam-wheel 9,

provided with two pins 9^a and 9^b, that engage a reciprocating lever 9^c, mounted on a fulcrum-pin 9^d. The end of the lever 9^c engages the plunger 8, the engagement being such
5 that the oscillating motion of the lever shall give to the plunger a reciprocating motion. The connection may be made in any well-known way to produce this result.

On the face of the cam-wheel 9 is a smaller
10 cam-wheel 9^e, which oscillates a lever 10, and the lever 10 lifts the false bottom 5^b, so that with each reciprocation of the plunger 8 there is a corresponding vertical reciprocation of the false bottom 5^b and of the wires sup-
15 ported by it; but the simple reciprocation of the false bottom is supplemented by an absolute lift of the false bottom to compensate for the removal of the top wire of the bundle of wires therein.

20 With each reciprocation of the plunger 8 a wire is removed from the receptacle and carried forward between the sheets of fabric, and to compensate for the removal of the wires the bottom rises with a steady upward
25 movement. From the under side of the false bottom 5^b there extends downward a screw-threaded stem 5^c, which passes through a nut 5^d. The nut reciprocates vertically under the action of the lever 10 and carries the stem 5^c
30 with it. On the stem 5^c is mounted a ratchet-wheel 5^e, which engages with a pawl on the lever 11, and the lever 11 is fulcrumed on the shaft of the cam-wheel 9^e. A notch in the lever or in a lug 11^a on the lever engages with a
35 pin 9^f on the lever 9^c, and at each oscillation of the lever 9^c the ratchet-lever 11 actuates the pawl 11^b and turns the ratchet-wheel 5^e one notch. This turns a screw-threaded stem 5^c through the nut 5^d, gradually lifting the
40 false bottom 5^b with respect to the nut.

An exhaust-air engine is placed in connection with the exhaust-chamber 7, and as the bundles of wires are lifted by the reciprocating rod 5^c into close proximity to the opening
45 6^a the air-pressure causes the uppermost wire of each bundle to adhere to the under side of the plate 6, while the other wires of each bundle drop, with the false bottom, away from the plate. This leaves one wire under each
50 opening 6^a in the path of the plunger 8, and the plunger pushes the wires forward until they are caught between the sheets of fabric and between the rolls *c* and *c'*, and all the wires being pushed forward simultaneously
55 enter properly between the fabric. After the wires have been pushed far enough, so that certainty of forward movement is assured, the plunger 8 recedes and the false bottom 5^b is again lifted by the action of the lever 10,
60 and the upward limit of this reciprocation is properly timed with reference to the rotation

of the rolls *c* and *c'*, so that a small belt of the fabric intervenes between each row of wires, across the belt, between the row of wires and the succeeding row.

The timing of the movement of the fabric and of the vertical reciprocations of the wire is regulated by the relative size of the sprocket-wheels 13 and 14, the sprocket-wheel 13 being on the shaft of the roll *c'* and the sprocket-wheel 14 being on the shaft of the cam-wheel 9. With longer wires a larger sprocket-wheel 14 is demanded, each length of wire requiring its appropriate sprocket-wheel.

What I claim is—

1. In a dress-stay-manufacturing machine, in combination with mechanism for laying and cementing together the strips of fabric, a storage-receptacle for stay-wires, means for reciprocating the wires in said receptacle, toward an exhaust device, said exhaust device arranged to engage and hold one of said stay-wires, and a plunger arranged to engage the stay-wire while held by the exhaust device and push it forward into engagement between the strips of fabric, substantially as described.

2. In a machine for manufacturing dress-stays, in combination with mechanism arranged to bring and cement together two sheets of fabric, a vertically-reciprocating holder for stay-wires, a pneumatic sustaining device above the holder, and means for engaging a supported wire and pushing it into engagement between the sheets of fabric, substantially as described.

3. In a machine for making dress-stays, in combination with mechanism for bringing together and cementing together the sheets of fabric, a vertically-reciprocating receptacle for stay-wires, a compensating device arranged to lift the receptacle with respect to other reciprocating parts, a pneumatic device arranged above the receptacle to support the uppermost of the stay-wires, and a plunger adapted to push the supported stay-wires into engagement between the sheets of fabric, substantially as described.

4. In an apparatus substantially as described, a receptacle for the stay-wires, a screw-threaded rod adapted to reciprocate the wires in said receptacle, a nut upon said rod, means for reciprocating said nut, and means for producing a relative motion of rotation between said nut and rod, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

ARTHUR COLTON.

Witnesses:

CHARLES F. BURTON,
JOHN N. GOODRICH.