

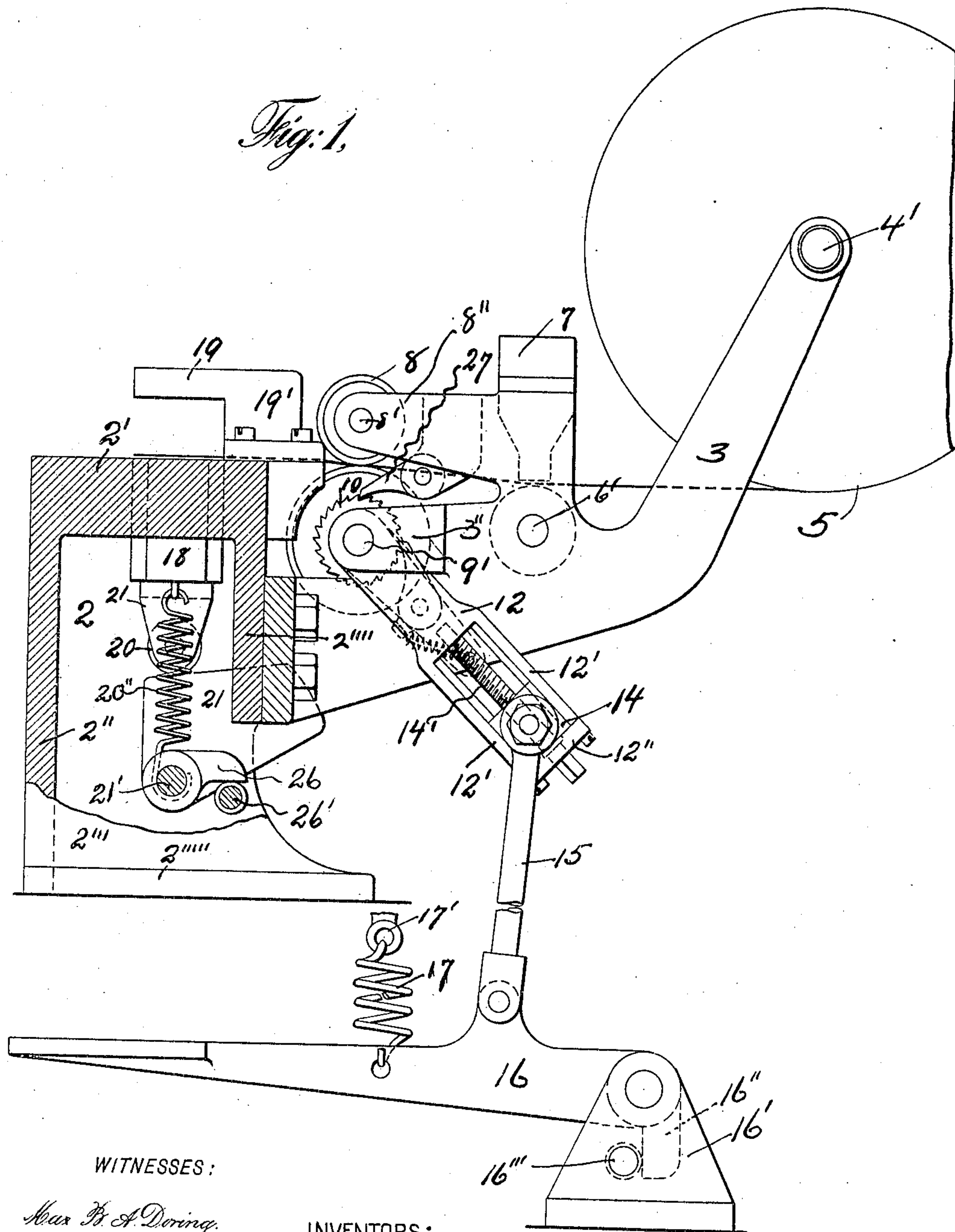
No. 843,488.

PATENTED FEB. 5, 1907.

W. H. PARKHURST & A. O. NOYES.
EYELET STAY JOINING MACHINE.

APPLICATION FILED JAN. 13, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

Max B. A. Doring.

George Calvert

INVENTORS:

Winfield H Parkhurst, Arthur O Noyes

BY *Kenny & Gough* ATTORNEYS

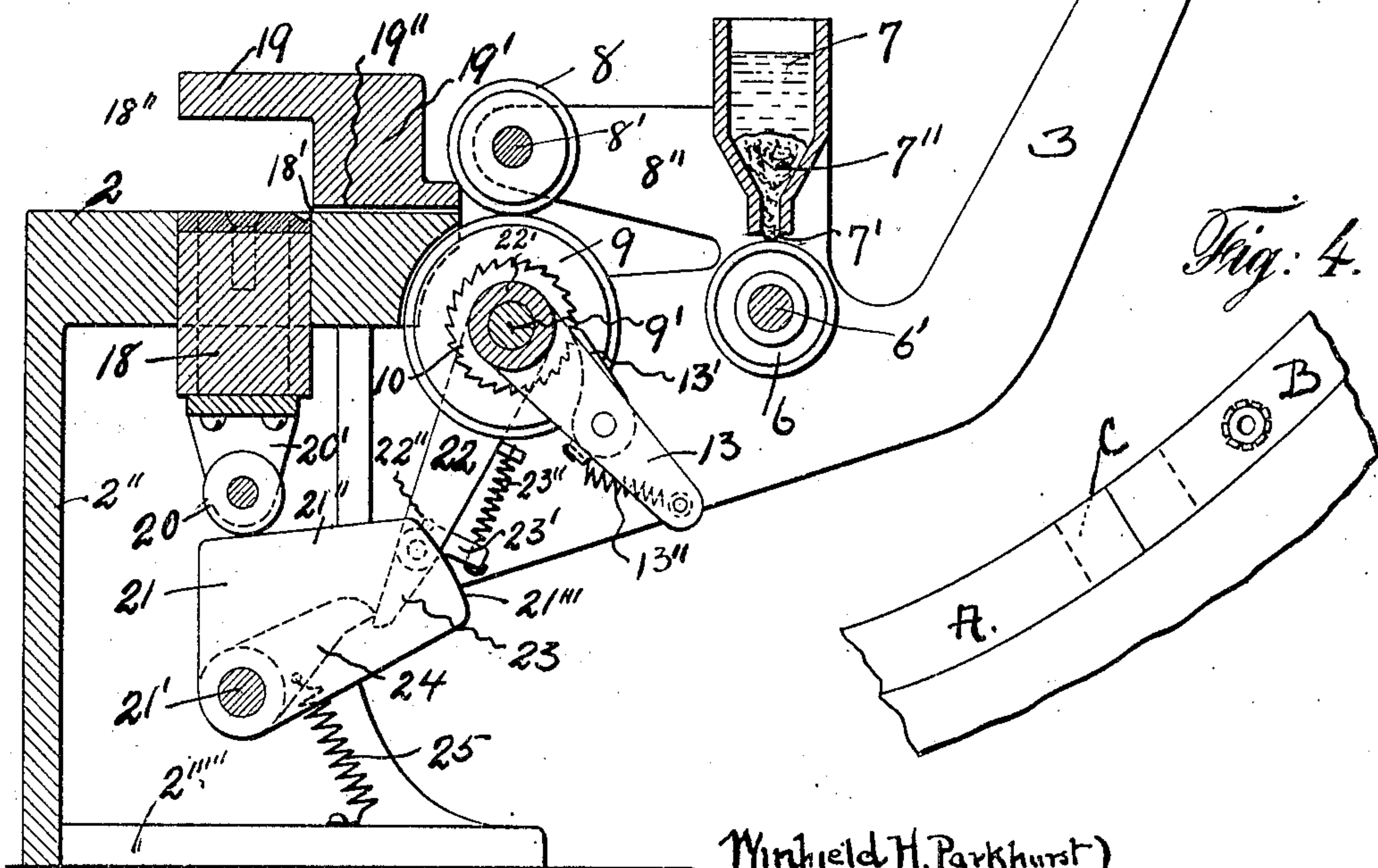
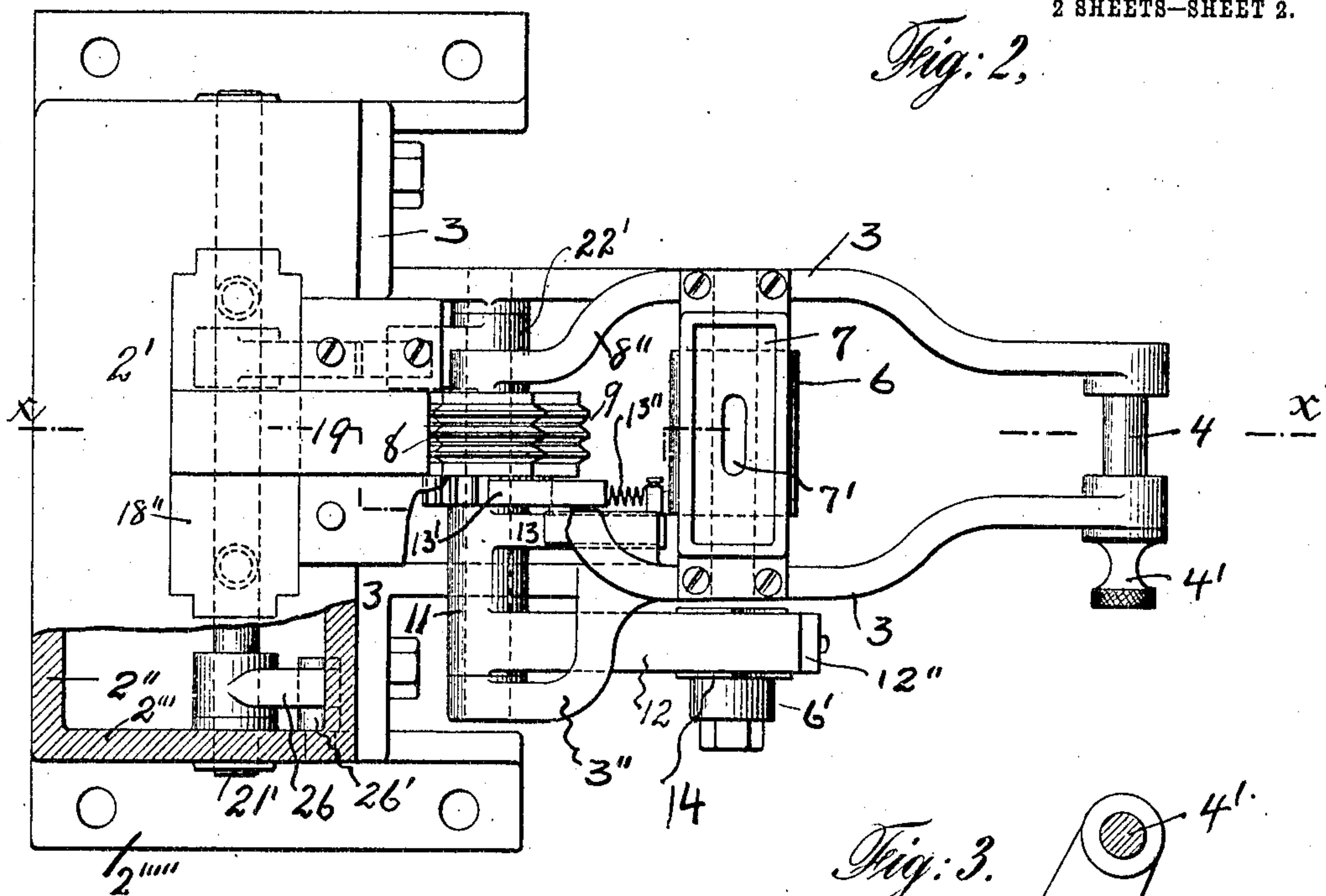
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Arthur O. Noyes } INVENTORS

BY
Hensley & Gough
ATTORNEYS

UNITED STATES PATENT OFFICE.

WINFIELD H. PARKHURST, OF SWAMPSCOTT, AND ARTHUR O. NOYES, OF WAKEFIELD, MASSACHUSETTS, ASSIGNORS OF ONE-FOURTH TO JOHN C. NOYES, OF WAKEFIELD, MASSACHUSETTS, AND ONE-FOURTH TO HENRY P. CONNELL, OF LYNN, MASSACHUSETTS.

EYELET-STAY-JOINING MACHINE.

No. 843,488.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed January 13, 1906. Serial No. 295,884.

To all whom it may concern:

Be it known that we, WINFIELD H. PARKHURST and ARTHUR O. NOYES, citizens of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, and Wakefield, in the county of Middlesex and State of Massachusetts, respectively, have invented certain new and useful Improvements in Eyelet-Stay-Joining Machines, of which the following is a specification.

Our invention relates to mechanism for joining or splicing the stays used to reinforce the uppers of shoes along the eyelets thereof. These stays are made in two pieces and are usually joined at their abutting ends by hand, the joint being made by using a splicing-piece or by lapping the ends of the stay on each other. The gluing of these stays to this splicing-piece or to each other and the final pressing have heretofore been done by hand; and the object of our invention is to perform the operation by means of a simple mechanism which shall make the work performed more certain and regular in the completed result and greater in quantity.

To this end our invention consists in the use of tape-feeding, moistening, and cutting mechanism, in combination with means for pressing the conjoined strips firmly together, the whole being operated by one stroke of an actuating-lever, and in certain arrangements of parts and combinations of elements set forth particularly in the claims.

In the drawings herewith presented, Figure 1 is a side elevation of our mechanism, the side wall of the table being broken away. Fig. 2 is a plan view. Fig. 3 is a section on the line X X, Fig. 2. Fig. 4 is an inside face view of a shoe-flap, showing the form of the reinforcing-pieces A and B and the position of the tape-strip C.

Like characters in the several views designate like parts.

The mechanism comprises, essentially, a base-block or table having a vertically-moving pressure-head and cutter, a tape-roll, an adjustable ratchet tape-feed, a presser-actuating cam, and a treadle or actuating lever so connected to the ratchet-feed and the presser-raising mechanism that the tape shall be fed,

cut off, and pressed against the reinforces at one continuous downward stroke.

2 designates the table, having the upper plate 2', the front 2'', the sides 2''', the rear lugs 2''', and the base-flanges 2''''', the base-flanges having screw-holes for attachment to any suitable stand or support.

Attached to the rear flanges by bolts and projecting rearwardly are the brackets 3, on which the tape-roll, moistening and feed rolls, and the feed-actuating mechanism are supported. These brackets might, of course, be made in one piece with the table, if desired.

The rear ends of the brackets are upwardly extended and carry a shaft 4, which is removable from its bearing, and is provided with any suitable device for holding it in place, as the finger-nut 4'. This shaft is to carry a roll of adhesive tape 5. Indicated diagrammatically in Fig. 1.

Below and forward of the tape-roll shaft is a felt-covered roller 6, above which is located a moistener. We prefer to make the moistener in the form of a liquid-container 7, having at its lower end a narrow lateral slot 7' of the width of the roller 6. The lower end of the container is narrowed, as shown, and filled with some liquid-absorbing material, as felt or sponge 7'', which projects out slightly through the slot sufficiently to come in contact with the adhesive-faced surface of the tape from roll 5.

8 and 9 are the feeding-rolls, which in the rotation draw the tape from its roll 5 and present it to the cutter. The upper roll 8 is loose and is mounted on a shaft 8', carried in bearing-arms 8'', rigid with the bracket. The lower of these arms is broken away in Fig. 2, so as not to obstruct the view of the lower feed-roll shaft.

The upper and lower feed-rolls preferably have circumferential corrugations on their faces to engage the tape, it being best that as little roll-surface should contact with the tape as possible, particularly on the adhesive-faced side.

The lower roll 9 is mounted to turn with a shaft 9', which is carried on the brackets 3. As will be noted in Fig. 2, the shaft projects at one end beyond the line of the bracket,

and in order to accommodate this the material of the brackets is cut to and bent outward to form an arm 3'', in which that end of the shaft is borne. Attached to the feed-roll 5 9 to turn with it is a ratchet-wheel 10.

11 is a sleeve having rotative engagement with shaft 9' and located between the ratchet-wheel 10 and the end of arm 3''. Projecting from the sleeve 11 are the arms 12 13. 13, 10 as shown plainly in Fig. 3, carries pivoted to it a pawl 13', whose tooth engages with the ratchet-wheel 10. The pawl is held depressed against the teeth by a spring, as by the coiled spring 13''.

15 The arm 12 projects outward and downward from the sleeve 11 and is bifurcated at its lower end to form guides 12', in which the head 14 is capable of adjustment. The head is screw-threaded parallel to the guides 12', 20 and through this passes the threaded rod 14'. At the outer ends the guides 12' are joined by a cross-bar 12''. The threaded rod 14' projects out through the bar 12'' and is squared for the application of a wrench.

25 Pivoted to the side of the head 14 is a connecting-rod 15, which at its other end has pivotal connections with a treadle 16, pivoted at its rear end in a suitable support 16'.

In order to hold the treadle in its raised position, we employ a spring 17. It is to be understood in this connection that the base or 30 table 2 is intended to be supported on any suitable frame or standard (not shown) at a convenient distance above the floor and that the upper end of the spring 17 is intended to be attached to said frame or support by an 35 eye 17' or other attachment. This being an arrangement common to a large variety of foot-operated mechanisms, we have not 40 deemed it necessary to show it.

In order that the treadle may not be raised too high by the force of the spring, we provide it with an angularly-projecting stop 16'', (shown in dotted line, Fig. 1,) which engages 45 with a stud 16'''.

18 is a vertically - movable presser-block which fits closely in a suitable slot in the top plate of the table 2. Preferably the top plate and the presser-block should be thick 50 enough to guide and hold the presser-block firmly in any of its positions, so that its movements shall be even and regular. The upper face of the presser-block has at its rear edge a longitudinal groove whose rear margin 55 forms a cutting edge 18'.

Supported above the table 2 by a base 19' is the finger 19, which projects immediately over the presser-head 18. The finger 19 and base 19' may be attached to the table 2 in 60 any convenient manner, as by bolts or screws; but at its middle, opposite the rolls 8 and 9, it is raised sufficiently above the surface of the table to leave a space or slot 19'' for the passage of the tape 5.

65 On the under side of the sliding block 18 is

a downwardly-projecting angle-iron 20', carrying an antifriction-roller 20.

Pivoted to the sides of the table on a shaft 21' is a cam 21, which is so located beneath the presser-head that its face will contact 70 and engage with the antifriction-roller 20. The cam is so shaped as to give the rapid and sharp thrust to the presser-head necessary to cut off the tape projecting through slot 19'' and then when the head has reached the up- 75 ward extent of its movement—that is, when the cam has turned so far that the roller 20 is at the outer extremity of cam-face 21''—the further movement of the cam acts, by its face 21''', to give a final firm pressure to the con- 80 joined parts of the reinforce-pieces and the tape against the projecting finger or plate 19. Acting against the raising force of the cam is a spring 20'', attached above and to the presser-block and at its other end to any 85 suitable fixed point, as the shaft 21'. There may be two of these springs.

The cam-operating mechanism comprises an arm 22, projecting from a sleeve 22', fast on shaft 9', whose outer end engages beneath 90 the end of an arm 24, (shown in dotted lines in Figs. 2 and 3,) fast on the cam-shaft 21'. As the shaft 9' is turned it raises arm 22, which pushes outward and upward on arm 24, rotating shaft 21' and its attached cam 21. 95

It is necessary that the shaft 9 shall be capable of being turned through varying degrees of a circle in order to admit of the adjustment of the feed; but the presser-block should have one length of stroke. To that 100 end, therefore, we have designed our mechanism so as to allow the arm 22 to slip by the arm 24 after the latter has been raised to its upright position. Immediately this has occurred a spring 25 acts to reverse the shaft 105 and reverse the motion of the cam. This spring 25 is connected at one end to the arm 24 and at the other to the base of the table 2. After spring 25 has acted the arm 22 must return past the arm 24. To accomplish this, 110 we form arm 22 with a movable end 23, capable of being held rigid with the arm 22 during movement in one direction and of giving when the arm is moving in the other direction. This is accomplished by pivoting the 115 end piece 23 to the arm 22 and providing it with a rigid angular projection 23'. At the junction of this angular projection with the end piece is formed a shoulder which engages with a stop 22'' on the arm 22. A spring 23'' 120 pulls upward on the projection 23'. When the arm 22 moves up, the end piece strikes the end of arm 24. As the end piece is held from turning on its pivot by the stop 22'', the arm raises and forces out the arm 24 125 until the two arms have passed each other. On the return, however, as the end piece contacts with arm 24 it yields against the force of the spring 23'', allowing the two arms to pass. 130

In order to limit the motion of the cam 21, we provide the shaft 21' with a projecting finger 26, which when the cam has reached its lowermost position comes against a stop 26', projecting inwardly from the side of the table 2.

While the presser-block 18 may be made in one piece, we believe it best to provide it with a face-plate 18'' of steel. This is removably attached to the presser-block, as by screws, and admits of the cutting edge 18' being sharpened when desired or the substitution of a new plate when the old becomes worn.

To prevent any back motion of the feed-roll 9, the bracket 3 carries a dog 27, which engages with the teeth of ratchet 10.

The operation of our mechanism is as follows: A previous depression of the treadle 16 being fed forward, the tape 5 through the slot 19'' onto the table, with its moistened adhesive face upward, the two pieces A B of the reinforcee are inserted from either side of the table and placed there with the ends abutting. The operation now depresses the treadle 16, whose connecting-rod 15 draws down on the arm 12, turning shaft 9'. As the pawl 13' slips over the teeth of ratchet 10 the feed-rolls remain unrotated; but the shaft 9' swings arm 22 forward, engaging it with the arm 24, which, through the shaft 21', turns the cam 21 and raises the presser-block 18. The cutting edge 18' cuts off the tape and the two reinforcee-pieces are carried upward and by reason of the rounded face 21''' of the cam pressed firmly yet gradually against the projecting plate 19. As the arm 22 slips by the arm 24 the springs 25 and 20'' pull down the cam and presser-block, as before described. The treadle 16 continues its downward movement until its lowest position is reached. Pressure on it being relieved, the spring 17 draws it up, forcing upward the arm 13. The pawl 13' engages with the ratchet 10, turning the feed-roll 9, drawing off tape from under the moistening-sponge 7'' and forcing it forward through the slot 19'' onto the table 2. It will be noted that by adjusting the head 14 to a position higher up on the slides 12' the arc of movement of the arm 12 is decreased and in consequence the number of teeth passed over by the pawl 13' in its downward movement and the consequent feed of the rolls is decreased. Thus the machine may be adjusted to cut any length of tape desired, and thus conform to any width of reinforcing-strip.

It is to be noted that as the passage between the feed-rolls is on a higher level than the sponge 7'' the tape 5 is drawn against the sponge, thus compelling the adhesive to become thoroughly moistened.

While we have above described the reinforcee-pieces as being placed end to end, they may of course be lapped, a tape being used having two adhesive faces, two moisteners

being used for this purpose. Our machine is also capable of use for pressing the two pieces of the reinforcee together when no tape is used, the joint being made by lapping and gluing one reinforcee-piece on the other. In all these methods of joining the reinforcing-strips the main thing is to get a definite, certain, and strong pressure to force the pieces together over their entire surface. This cannot be done by hand, at least rapidly, and it is to overcome the uncertainty, slowness, and expense of handwork that we have devised this machine.

In addition it may be said that stays joined by hand are never accurately in line with each other and if not in line do not run parallel with the upper of the shoe and as a consequence throw it out of shape, so that it does not fit properly. The parts of the stays joined by our device would be accurately in line with each other without any special care being taken by the operator and may be therefore accurately placed in the shoe, thus tending to enhance the quality of the product.

It is to be understood that this machine might be modified in many ways without departure from our invention and without changing its principles of operation.

Having described our invention, what we claim is—

1. A machine of the character described, comprising a fixed table laterally open and having a slot at the rear thereof, mechanism for feeding a reinforcing adhesive tape through the said slot, a sliding presser-block supported by and moving through the fixed table against the opening of said slot, a knife-edge on the rear margin of said presser-block in contact with the said slot-opening, a stationary presser-plate against which the presser-block is adapted to move, an operating-lever, and mechanism between the lever and presser-block whereby on the depression of the lever the presser-block shall be moved against the stationary presser-plate.

2. A machine of the character described comprising a fixed table laterally open and having a slot at the rear thereof, a reel carrying a reinforcing adhesive tape, means for dampening the gummed face of said adhesive tape, mechanism for feeding the said tape intermittently through said slot, a sliding presser-block supported by and moving through the fixed table against the opening of said slot, a knife-edge on the rear margin of the presser-block in contact with said slot-opening, a stationary presser-plate against which the presser-block is adapted to move, an operating-lever and mechanism between the lever and presser-block whereby on the depression of the lever the presser-block shall be moved against the stationary presser-plate.

3. A machine of the character described, comprising a fixed table laterally open and

having a slot at the rear thereof, rolls for feeding an adhesive tape through the said slot, a sliding presser-block supported by and moving through the fixed table against the opening of said slot, a knife-edge on the rear margin of the said presser-block in contact with said slot-opening, a stationary presser-plate against which the presser-block is adapted to move, and mechanism whereby the feed-rolls shall be turned to force a section of the adhesive tape forward onto the face of the presser-block, and whereby the presser-block may be raised against the stationary plate immediately after the said tape is fed forward.

4. A machine of the character described comprising a fixed table laterally open and having a slot at the rear thereof, rolls for feeding an adhesive tape through the said slot, a sliding presser-block supported by and moving through the fixed table against the opening of said slot, a knife-edge on the rear margin of said presser-block in contact with said slot-opening, a stationary presser-plate against which the presser-block is adapted to move, an operating-lever movable downwardly, a spring for returning the operating-lever, and connections between the operating-lever, the feed-rolls and the shaft whereby a downward stroke upon the operating-lever will move the said presser-block against the face of the stationary plate, and the return of said operating-lever will act to move the feed-rolls to force the said tape forward onto the face of the presser-block.

5. A machine of the character described, comprising a fixed table, a sliding presser-block moving therein, a stationary presser-plate against which the presser-block is adapted to move, a reciprocating cam mounted below the presser-block and its acting faces bearing at all times against the lower end of said presser-block, one of said acting faces of the said cam being tangential to a circle whose center is the axis of the cam and the other face being concentric therewith, whereby the presser-plate is lifted rapidly to a position with its upper face against the stationary plate and there held until the cam is reversely moved, and mechanism for reciprocating said cam.

6. A machine of the character described, comprising a fixed table, a sliding presser-block moving therein, and having a roller on its lower end, a stationary presser-plate against which the presser-block is adapted to move, a reciprocating cam mounted below the presser-block, its acting faces bearing at all times against the lower end of said presser-block, one of said acting faces of the said cam being tangential to a circle whose center is the axis of the cam, and the other face being concentric therewith, a shaft on which said cam is mounted, an arm on said shaft, a spring for returning the cam to its

lowered position, intermittently-rotating tape-feed rolls, a reciprocating arm on the shaft of said feed-rolls, engaging with the arm on the cam-shaft, and mechanism for giving a reciprocating motion to said feed-roll arm.

7. A machine of the character described comprising a fixed table, a stationary presser-plate above said table and provided with a downwardly-projecting base at its rear margin attached to the said table having a tape-slot therethrough on a level with the table, a sliding presser-block forming part of and moving through the table and having a cutting edge on its rear margin in contact with the opening of said slot, a roll for carrying adhesive tape, means for moistening said tape as it leaves the roll, step-by-step mechanism for feeding the tape, a treadle beneath said table, and connections between the treadle and the presser-block for raising and lowering the block, and between the treadle and the step-by-step feed mechanism for operating it as the treadle is raised and the block has been lowered to the level of the slot.

8. A machine of the character described comprising a table, a sliding presser-block connected thereto, a presser-plate against which the block is adapted to be moved, a shaft located beneath said table, a cam on said shaft acting against the presser-block to raise it, an arm projecting from the cam-shaft, a shaft parallel to the cam-shaft and carrying an arm adapted to engage with and raise the arm of said cam-shaft, means for holding adhesive tape, a roll for feeding said tape on the table, a treadle connected to the last-referred-to arm for operating it, and mechanism for intermittently operating the said tape-feeding mechanism from the last-referred-to shaft.

9. A machine of the character described comprising a fixed table, a movable presser-block, a stationary presser-plate and mechanism for actuating the presser-block, a tape-roll, feed-rolls engaging with said tape to force it into position between the presser block and plate, a ratchet mounted on the shaft of one of said rolls, an arm carrying a pawl engaging with said ratchet and mounted on the said shaft to move it in one direction, longitudinal guides formed on said arm, a pivot-block movable between said guides, a longitudinal screw mounted on said arm between the said guides and engaging with the pivot-block, means whereby the screw may be turned to adjust the distances between the pivot-block and the arm-shaft, a treadle and a connection between the treadle and the said pivot-block.

10. A machine of the character described comprising a fixed table, a sliding presser-block, a presser-plate against which the presser-block is adapted to be moved, a shaft

located beneath the said table, a cam on said shaft acting against the presser-block to raise it, an arm projecting from the cam-shaft, means for holding adhesive tape, a roll for feeding said tape into position between the presser block and plate, a shaft on which said feed-roll is mounted, a treadle connected to the feed-roll shaft for giving it reciprocating rotary motion, and an arm on said feed-roll shaft engaging with the arm on the cam-shaft to raise the latter on a downward movement of the treadle.

11. A machine of the character described, comprising a table, a sliding presser-block, a presser-plate against which the block is adapted to be moved, a shaft located beneath said table, means on said shaft for acting against the presser-block to raise it, an arm projecting from said shaft, a second shaft parallel to the first shaft and carrying an arm projecting out therefrom, a catch-piece pivoted on the end of said arm adapted to be rigid with said arm and to engage with the arm on the first-named shaft when the first-named shaft is raised, and to be tripped by the first-named shaft-arm when the second-named arm is lowered, means for holding adhesive tape, a roll for feeding said tape onto the table, a treadle connected to the second-named shaft for operating it, and mechanism for intermittently operating said tape-feed roll from the said shaft.

12. A machine of the character described comprising a table, a sliding presser-block connected thereto, a presser-plate against which the block is adapted to be moved, a shaft located beneath said table, a cam on said shaft acting against the presser-block to raise it, an arm projecting from the cam-shaft, a spring for holding the cam in its lowered position, a second shaft parallel to the cam-shaft and carrying an arm, a catch-piece pivoted on the end of said arm and adapted to engage with the cam-shaft arm, a stop for holding the catch-piece rigid with said arm when the arm is being raised, means for holding adhesive tape, a roll for feeding said tape onto the table, a treadle connected to the last-referred-to arm for operating it, and mechanism for intermittently operating said tape-feed mechanism from the last-referred-to shaft.

13. A machine of the character described, comprising a fixed table, a sliding presser-block, a presser-plate against which the block is adapted to be moved, a shaft located beneath said table, a cam on said shaft adapted to act against the presser-block to raise it, a spring for drawing down said presser-block, a spring for holding said cam in its lowered position, an arm projecting from the cam-shaft, an actuating-shaft parallel with the cam-shaft and carrying an arm adapted to engage with and raise the arm on the said cam-shaft when moving in one direc-

tion, but to slip by the said cam-shaft when moving in the other direction, means for holding adhesive tape, a roll for feeding said tape onto the table mounted on said actuating-shaft but independently movable therefrom, mechanism carried by said shaft for engaging with the said roll when the shaft is rotated in one direction, but disengaged from said roll when the shaft is rotated in the other direction, a shaft-operating arm extending outward therefrom, a treadle, and an adjustable connection between the treadle and the said shaft-operating arm.

14. In a machine of the character described, a fixed table, a presser-block movable upward through said table and having a cutting edge on its rear margin, a presser-plate supported by the said block a free space being left between said presser-block and said table on three of its sides for the insertion of the strips to be reinforced, a base for supporting said presser-plate whose outer wall is in alinement with the inner edge of said presser-block, said base extending only along the rear edge of said table, said base being provided with a slot on a level with the upper face of the table for the passage of a strip of adhesive tape, mechanism for raising and lowering the presser-block, means for holding a strip of adhesive tape, and mechanism for feeding said tape onto the face of the presser-block when it is at its lowermost position and on a level with the upper face of said table, and means for moistening the said adhesive tape before it passes onto the said table.

15. A machine of the character described, comprising a fixed table, an upwardly-moving presser-block operating through said table, a stationary presser-plate supported on the said presser-block by a base the inside face of which coincides with the inner edge of said presser-block, said base having a slot therethrough for the passage of adhesive tape, a tape-roll, a moistening device adapted to moisten the tape before it enters the slot in the base of the presser-plate, mechanism for intermittently feeding said tape forward onto said presser-block, and mechanism for raising said block against the face of the presser-plate after the tape-feeding mechanism has acted to feed a section of tape forward.

16. A machine of the character described, comprising a fixed table, an upwardly-moving presser-block operating through said table, a stationary presser-plate supported above said presser-block by a base the inside face of which coincides with the inner edge of said presser-block, said base having a slot therethrough for the passage of adhesive tape, feed-rolls located rearward of said slot through which said tape passes, a tape-roll, a moistening device adapted to moisten the tape prior to its passage through the feed-rolls, mechanism for intermittently feeding said tape forward onto said presser-block,

and mechanism for raising said block against the face of the presser-plate after the tape-feeding mechanism has acted to feed a section of tape forward.

- 5 17. A machine of the character described comprising a fixed table having downwardly-projecting standards, a movable presser-block reciprocating in said table, a stationary presser-plate supported on a base resting
10 on the said table, said base being slotted for the passage of adhesive tape, rearwardly-projecting supports on said table, feed-rolls carried on said supports immediately behind the slotted base, a moistening device carried

on said supports behind the feed-rolls, mechanism below the said supports for intermittently actuating the feed-rolls and raising the reciprocating presser-block, and a treadle for operating said mechanism. 15

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses. 20

WINFIELD H. PARKHURST.
ARTHUR O. NOYES.

Witnesses:

JAMES L. LEAVITT,
G. E. BRYANT.