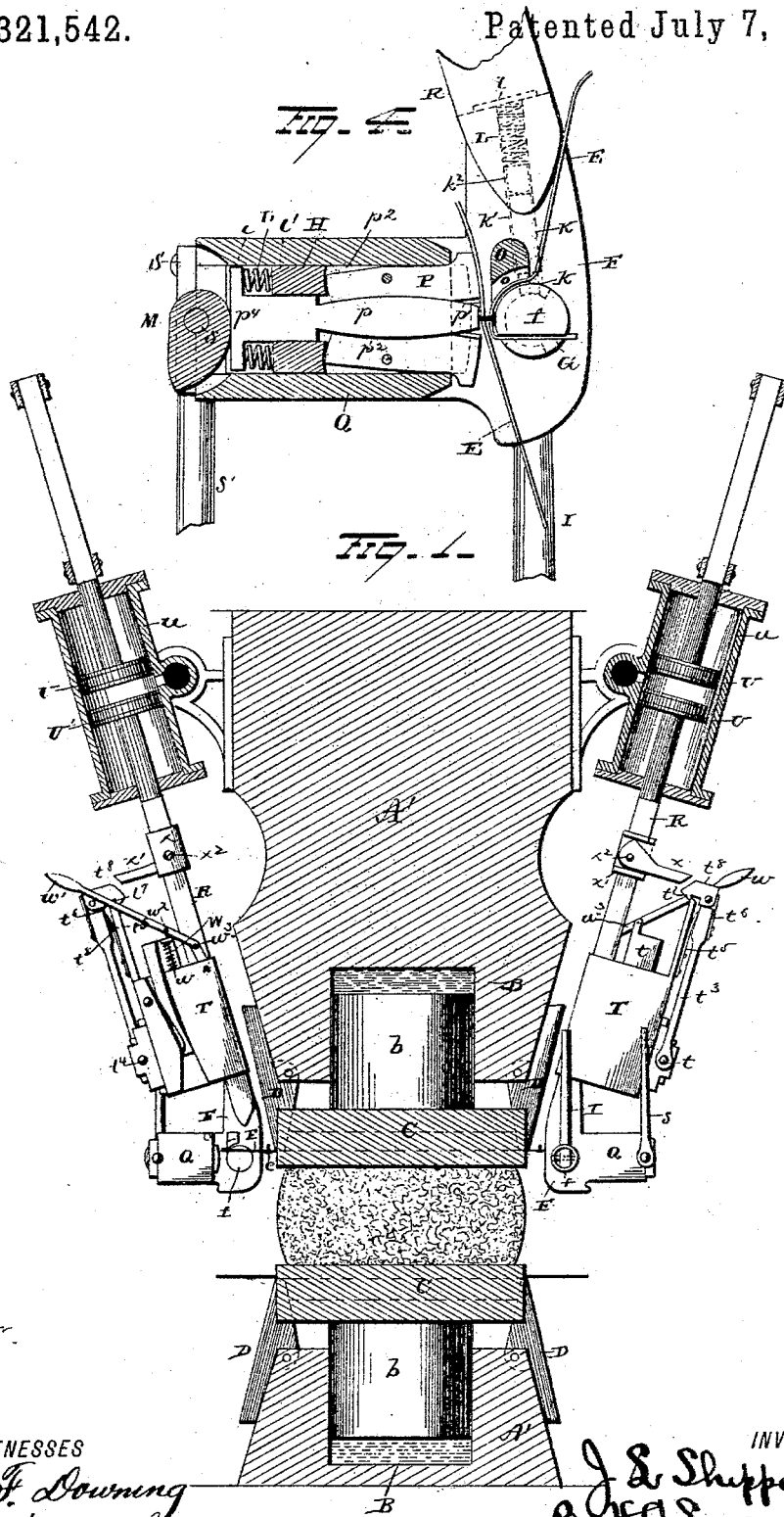


J. L. SHEPPARD. COTTON PRESS.

No. 321,542.

Patented July 7, 1885.



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(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

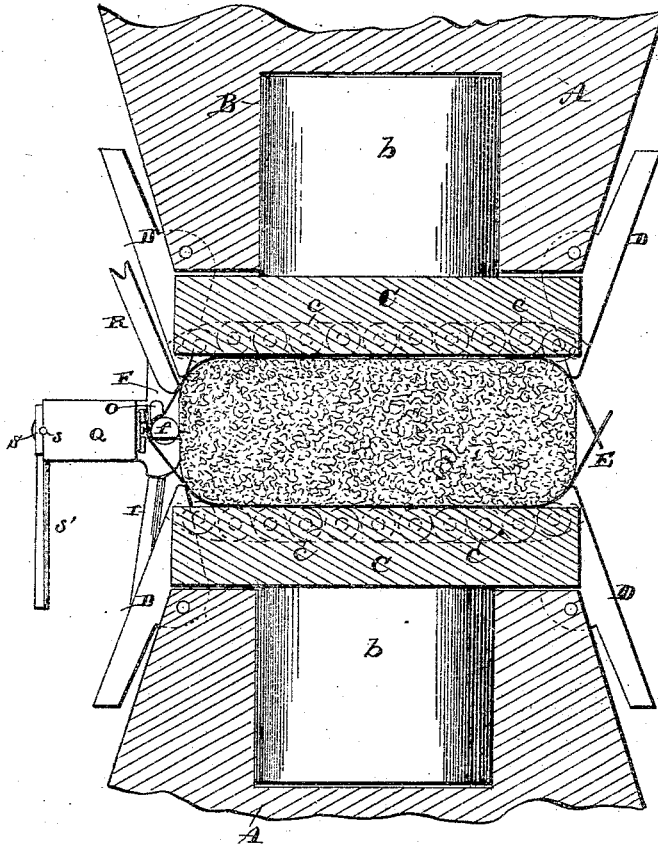
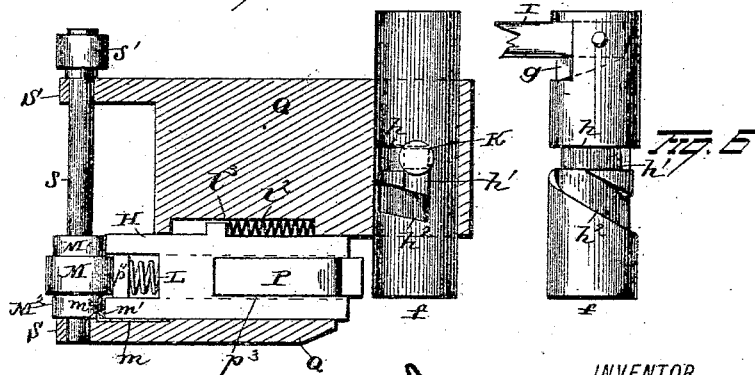


Fig. 5.



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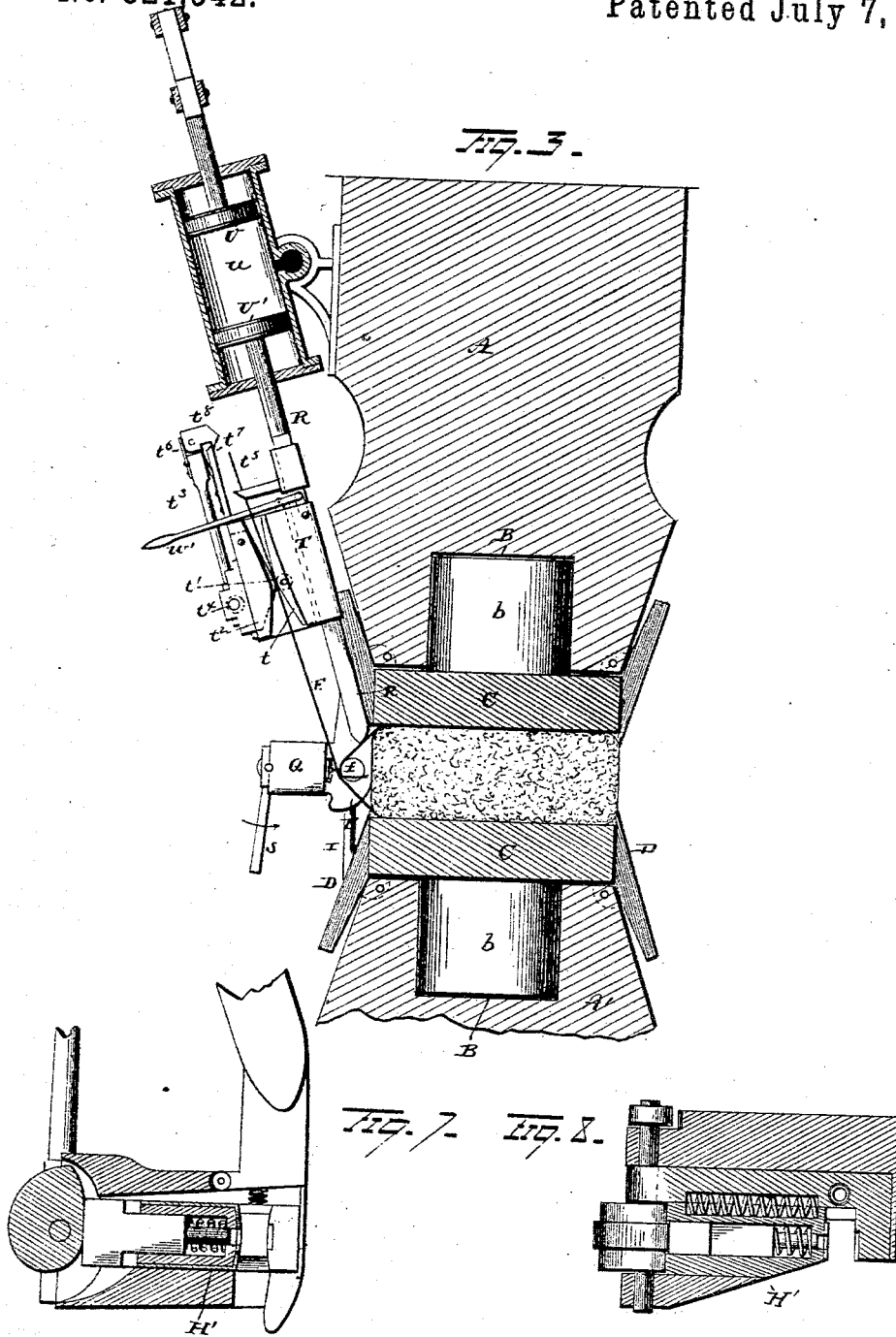
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UNITED STATES PATENT OFFICE.

JOHN L. SHEPPARD, OF CHARLESTON, SOUTH CAROLINA.

COTTON-PRESS.

SPECIFICATION forming part of Letters Patent No. 321,542, dated July 7, 1885.

Application filed May 29, 1885. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. SHEPPARD, of Charleston, in the county of Charleston and State of South Carolina, have invented certain new and useful Improvements in Cotton-Presses; and I do hereby 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 appertains to make and use the same.

My invention relates to an improvement in cotton-presses.

The object is to provide improved mechanism for shaping the bale and at the same time pressing the bands thereon in a position to be riveted, and to further provide mechanism for taking up any slack which may occur, and for riveting the ends of the bands together.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of the improved press, showing the band tightening and fastening devices attached thereto, with the platens and bale in position to receive the bands. Fig. 2 is a similar view showing the flexible portions of the platens depressed and bands forced thereby into the bale simultaneously with the rounding of the ends, and also shows the ends of the band in position in the punch and riveting device. Fig. 3 represents the ends of the band in position within the punch and tightener, the plunger of the punch being in the act of upsetting the end of the rivet. Fig. 4 is a view of the punch in longitudinal section. Fig. 5 is an end view of the punch, and Fig. 6 is a detached view of the bed-block cylinder. Figs. 7 and 8 represent a modified form of punch.

A A' represent, respectively, the upper and lower platens of the press. They are each provided with a recess, B, in which works the stem or plunger *b* of an auxiliary platen, C. The face of the auxiliary platen C is provided with two or more grooves extending lengthwise of the bands to be placed about the bale, and occupying positions toward the ends of the platens, in which are located flexible bars or strips *c*, consisting of a series of rollers

chained together at suitable intervals, as shown; or they may be formed of a series of flat or oval pieces suitably united, as found most desirable, to furnish the required strength and flexibility. The ends of the flexible portions *c* are secured to the lower ends of a pair, or several pairs, of arms D, pivotally secured to the platens A A'. When the bale is put in the press to receive the bands, the flexible portion C is horizontal, and the platen A is a short distance above the auxiliary platen C, and is held in that position by means of water, or its equivalent, between the end of the plunger *b* and the bottom of the recess B. The bands E, each in half-sections, are placed in position above and below the bale, and the water is then allowed to escape from the recesses B. The power of the press will now cause the platens A A' to approach each other, forcing the ends of the flexible portions *c* and the band-sections E into the position shown in Fig. 2. The ends of the bands are then placed in the punches and tighteners as follows: The ends of the upper sections, before the bands are placed in position on the bale, are bent to prevent them from slipping out of the bed-block *f*, and provided with rivets *e*. When the ends of the band-sections have been forced toward each other by the pressure of the flexible platens, the ends, which are provided with rivets, are placed in position in the punches, with the points of the rivets opposite the dies of the punches and their heads resting on the bed-blocks in the position shown in Fig. 2. The ends of the lower sections are then inserted in the punches between the dies and the points of the rivets, and the action of the punch inserts the rivets and heads them down.

The punch shown in connection herewith and particularly adapted to the purpose is constructed and mounted as follows: F is a bar or block secured to the lower end of the push-bar R, and forms a support for the box or housing Q, in which the punch H is located. A bed-block, *f*, consisting of a cylindrical bar, is supported in suitable bearings within the bar F, and has a rotary and sliding movement therein. The end of the cylinder *f*, which forms the bed-block proper, projects from the side of the bar F beneath the punch

H, and is provided with a narrow slot, G, formed in its end to a depth equal to the width of the bale-band used, and adapted to receive the end portion of the band therein when the band is first placed in position on the bale. The opposite end of the cylinder *f* is provided with a slot, *g*, adapted to receive the end of an operating lever, I, the end of which is pivotally secured therein in such a manner that it shall have no play transversely to the cylinder *f*, but shall have a limited play in the direction of its length. The object of this method of securing the operating-lever to the cylinder will appear further on. The functions of the bed-block cylinder *f* are to receive the end portion of the band-section E, with the rivet *e* in position, and roll the band thereon far enough to bring the point of the rivet directly beneath the socket in the punch, with the head of the rivet resting solidly in contact with the bed-block, then to slide longitudinally and release the band from its end, and, finally, to return to its original position, ready to receive another band.

To perform the above-named functions, the cylinder *f* is provided with a set of cam-grooves adapted to receive a spring-pressed dog, as follows: Suppose the cylinder *f* to be in a position to receive the end of a band, a groove, *h*, located in the surface of the cylinder transversely to its length, is sufficiently long to admit of the necessary rotary motion of the cylinder to bring the rivet beneath the punch. From this point the groove *h'* extends longitudinally along the surface a distance sufficient to allow the cylinder to slide longitudinally in its bearings to release the band. From this point a third groove, *h²*, extends diagonally on the surface to the point of starting, and serves to slide the cylinder longitudinally back to position when rotated backwardly. The bottoms of the grooves *h h' h²* are inclined in such a manner as to slightly raise the dog as it, relatively speaking, moves forwardly in the grooves, and said inclines, terminating abruptly, serve to lock the dog against a retrograde movement along the groove.

K is the dog. It consists of a round bar provided, preferably, with a squared end, *k*, adapted to engage the cam-grooves *h h' h²*, as described. The dog K has a longitudinally-sliding and rotary motion in a socket, *k'*, formed in the bar F at right angles to the face of the cylinder *f*. A short bearing-block, *k²*, having one of its ends *k²* formed conical or slightly rounded, rests with its conical end in contact with the end of the dog K and its flat end forming a seat for one end of a spiral spring, L. The latter is held in a compressed adjustment by means of a slide, *l*, secured to the bar F and adapted to cover the outer end of the socket *k'*. The operating-lever I serves to rotate the cylinder *f* forwardly, and then, by pressing it in contact with the bar F or a projection thereon, serves to slide the said cyl-

inder longitudinally, and, finally, to rotate it back to its former position. The bar F is further provided with a projection, O, having a concave face located near and adapted to conform to the convex surface of the cylinder bed-block *f*. The object of the projection O is to lay the band E snugly on the surface of the cylinder *f* and cause it to hold the rivet-blank in position. A transverse slot, *o*, in the concave face of the said projection allows the rivet to pass without interruption. The punch H has a vertically-sliding motion in its housing Q, and consists, essentially, of a pair of jaws, P, pivotally secured to the body of the punch and adapted to force the rivet through the band, and a plunger, *p*, adapted to head the rivet. The inner faces of the jaws P are provided with semi-cylindrical recesses *p'*, which form, when the faces are in contact, a socket adapted to receive the point of the rivet. The inner faces of the jaw-shanks are curved toward each other as they approach the contact-faces of the jaws and form incline-bearings for the double-cam plunger *p*. The body of the plunger *p* is provided with convex sides *p²*, adapted to fit between the curved faces of the jaw-shanks when the jaws proper are closed, and to force the jaws apart when pressure is applied to its head. The upper portion of the body of the punch is cut away, as shown at *p²*, to allow the upper ends of the jaw-shanks to approach each other as the jaws proper are forced apart. The lower end of the plunger is squared and formed of hard metal, adapted to upset the point of the rivet when forced into contact therewith. The head of the plunger *p¹* projects conveniently a short distance above the head of the body of the punch, and is operated at the proper instant by a cam, M, as will be hereinafter more fully described. To hold the plunger in a normally-elevated adjustment within the punch, a spiral spring, L, is interposed between a shoulder, *l*, thereon, near the head, and a shoulder, *l'*, on the body of the punch. The punch H is held in a normally-elevated adjustment with respect to the bed-block *f* by a spiral spring or spiral springs, *l²*, located within a recess or recesses, *l²*, formed partly in the side or sides of the body of the punch and partly in the side or sides of the housing Q. The punch is locked in its position within the housing Q by means of blocks S, which form half-bearings for the ends of the operating-shaft *s*, and which are secured firmly to the outer end of the housing. The shaft *s* extends through the upper end of the housing Q, and is provided with three cams, M M' M², rigidly secured thereon and adapted to engage the head of the plunger and the head of the punch on each side of the plunger, respectively. The cams M' M² are of similar form, and take simultaneously on the head of the punch when the shaft *s* is rotated. The cam M is of such shape that it does not tend to depress the plunger relatively to the punch until the punch has reached

the end of its stroke toward the bed-block; but when the punch has reached said limit and has thereby forced the rivet through the end of the band and into the socket $p'p'$, the cam M takes on the head of the plunger and forces the same downwardly (separating the jaws P) into contact with the point of the rivet and forms the head thereon. A short arm, m , secured to the upper end of the punch, has a projecting lip, m' which engages a flange, m'' , and thereby lifts the punch when the motion of the cam is reversed, regardless of the action of the spring or springs t' . The shaft s is operated by means of a lever, s' , secured on one end thereof, and by the above construction a single stroke of the lever will force the rivet through the band and secure it therein. The band is released from the bed-block by the pressure of the lever I into contact with the bar F, thereby sliding the bed-block cylinder longitudinally in its bearings, as heretofore explained.

I have spoken of the supporting-bar F as being secured to the end of a push-bar, R. I find it convenient to use a tightener in connection with the punch and fastener, as shown in the drawings, and hence have spoken of the push-bar R as the support for the punch; but it is not absolutely necessary to employ a tightener, as the pressure of the bands into the bale by means of the flexible platens serves to take up the greater portion of the slack, and it only requires that the ends of the bands shall be fastened. To accomplish this, in connection with the flexible platens, requires a set of punches on each end or side of the bale, as the bands are in half-sections; but when bands in a single piece are used, in connection with the improved punch, it is desirable that there should be some means for taking up slack, and it is also quite convenient to have the same means at hand to take up any slight amount of slack which may occur even when the sectional bands are used, and, as the tightener forms a good support for the punch, I prefer using them in connection with each other.

The tightener herein represented is of the same general construction as that shown and described in Letters Patent No. 240,856, granted to me on May 3, 1881, and consists of a housing, T, adapted to slide on the push-bar R, the housing and push-bar being attached to pistons U U', working in a cylinder, u , pivotally secured to the platen A by means of a hollow trunion, w' . The punch and fastener in the present case take the place of the buckle-holder in the case referred to above. The housing T is provided with a slide, t , operating in a groove within the housing and carrying a transverse roller, t' , adapted to form a bearing for one side of the band and to act in conjunction with a movable wedge, t'' , pivoted in the housing and adapted to form a bearing for the opposite side of the band. The wedge t'' is held depressed by means of a

lever, t^3 , provided with a cam-shaft, t^4 , attached to the back of the wedge. The free end of the lever t^3 is provided with a hook, t^5 , pivoted thereto and held in closed adjustment by a spring, t^6 . The hook t^5 takes under a projection, t^7 , on the housing and locks the lever and wedge in a depressed position when so engaged. When the lever is disengaged from the housing, the wedge is released, and when the lever is rotated the cam on the shaft t^4 tends to lift the biting end of the wedge from its bearing on the band. A spring, t^8 , on the housing tends to throw the lever t^3 outwardly when it is released from the housing. The slide t is held in a normally-open adjustment by means of a spring, W, secured on a guide-rod, w , as shown, and the said slide is operated against the tension of the spring by means of a lever, w' , pivotally secured to the end of the slide at w^2 and provided with a jointed arm, w^3 , between the slide and the housing T.

A slide, x , carrying a pawl, x' , is adapted to be secured in the desired adjustment on the push-bar R by means of a set-screw, x^2 , or other suitable device. The pawl x' is so pivoted to the slide x that it will give freely in one direction and allow the housing T to slide on the push-bar without disengaging the hook t^5 ; but when slid in the opposite direction thereon the pawl will engage the hook t^5 and thereby disengage the lever t^3 from the housing T, and hence release the wedge t'' from its grip on the band.

The wedge and mechanism for operating the same and the shape and construction of the housing T conform in shape and construction to the corresponding parts in the patent above referred to.

The lever for operating the slide t and the spring for holding the said slide in open adjustment are the parts which constitute the gist of my present invention, as far as the tightener is concerned.

To use the tightener in connection with the punch and fastener, the end of the band provided with the rivet is to be placed in position on the bed-block of the punch, as before explained. The free end of the band is then placed in position between the rivet and punch, and also inserted between the slide t and wedge t'' . The lever w' is then drawn down, forcing the slide t downwardly, bringing the roller t' beneath the depressed portion of the wedge, and gripping the end of the band between the said roller and wedge. The push-bar and housing T are then forced in opposite directions, drawing the band snugly about the bale, and holding it in that position until the punch has been operated and the rivet headed down. The return of the housing T and push-bar to their normal position automatically releases the band from between the wedge and roller, in the manner above explained.

Instead of the punch H, shown and described, a punch, H', Figs. 7 and 8, having a solid face, with a central perforation for the movement

of the plunger, might be employed, the face in this instance being provided with a pair of spring-clamps for holding a removable washer in position to receive the point of the rivet.

5 Bed-blocks of other forms and constructions might also be employed, and it is evident that many of the parts shown and described are susceptible of numerous changes in their form and arrangements without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,

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

15 1. In a press, a pair of flexible platens adapted to simultaneously shape the bale and force the bands into position for fastening, substantially as set forth.

20 2. In a press, the combination, with a set of flexible platens adapted to force the bands into position for fastening, of a combined punch and riveting device adapted to secure the ends of the bands, substantially as set forth.

25 3. In a press, the combination, with a band pressed into a bale in a position for fastening, and provided with a rivet-blank set in one of its ends, of a punch adapted to form a seat for the end of the band provided with the rivet-blank, and a plunger located within the punch for heading the rivet-blank, substantially as set forth.

30 4. In a press, the combination, with a half-section band pressed into a bale in position for fastening, of combined punching and riveting devices located on opposite sides or ends of the bale for securing the ends of the band-sections, substantially as set forth.

35 5. In a press, the combination, with a bale-band pressed into the bale in position for fastening, of a punch adapted to force a rivet through the band, and a plunger adapted to upset the end of the rivet, substantially as set forth.

40 6. In a press, a combined punch and riveting device, consisting, essentially, of a punch-support having a bed-block secured thereto for receiving the end of the band carrying a rivet-blank, a punch for forcing the rivet through the band, and a plunger for heading the rivet, the punch and plunger being operated by a triple cam, substantially as set forth.

50 7. The combination, with a press, of a com-

55 bined punch and riveting device, consisting, essentially, of a support provided with a bed-block adapted to form a seat for the end of the blank carrying the rivet-blank, a punch secured in sliding adjustment to the support and adapted to force the rivet through the band, and a plunger secured in sliding adjust- 60 ment within the punch and adapted to head the rivet, substantially as set forth.

8. The combination, with a press, of the combined punch and riveting device, provided with a rotary and longitudinally-sliding bed- 65 block for holding and releasing one end of the band, and further provided with a pair of jaws adapted to form a die when closed, and with a plunger for heading the rivet, substantially as set forth. 70

9. In a combined punch and riveting device for presses, the combination, with a bed-block adapted to receive the end of a bale-band and hold a rivet therein, of a pair of jaws pivoted to the punch, adapted to form a die when 75 closed, and a double-cam plunger adapted to separate the jaws and head down the rivet, substantially as set forth.

10. In a combination punch and riveting device for presses, the combination, with a 80 two-part die and a plunger adapted to slide between the die-sections, of a cylindrical bed-block provided with a series of cam-grooves and a spring-actuated dog adapted to engage the grooves, whereby a rotary movement of 85 the bed-block slides the same longitudinally, for the purpose substantially as set forth.

11. The combination, with a press adapted to hold the bale-bands in a position for fast- 90 ening, of a combined punch and riveting device secured to the push-rod of a band-tightening device, for the purpose substantially as set forth.

12. The combination, with a press adapted to hold the bale-bands in a position for fasten- 95 ing, of a combined punch and riveting device secured in yielding adjustment in the housing attached to the push-rod of a band-tightening device, substantially as set forth.

In testimony whereof I have signed this 100 specification in the presence of two subscribing witnesses.

JOHN L. SHEPPARD.

Witnesses:

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J. C. DILLINGHAM.