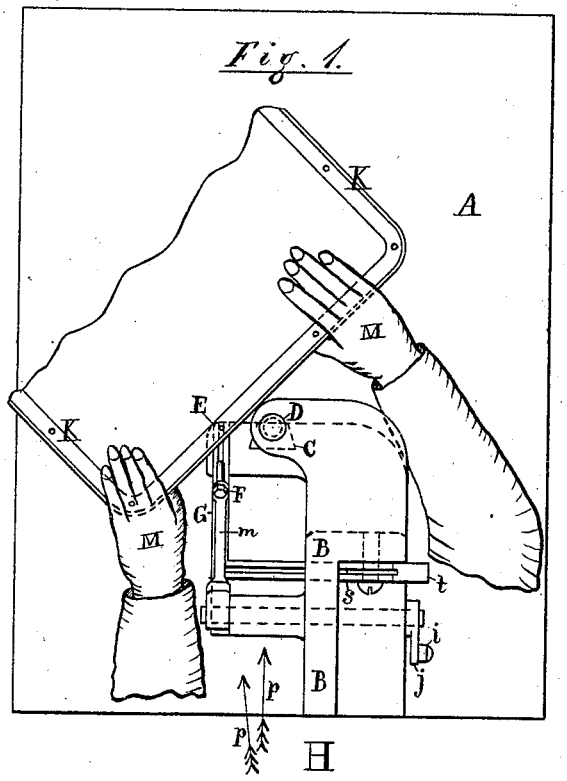
2 Sheets—Sheet 1

R. W. CHAPMAN.
Bag Framing Machine.

No. 207,714. Patented Sept. 3, 1878.

Fig. 1.



Attest:

Clarence W. Smith

E P Roberts

Inventor.

Robt. W. Chapman, per

Thos. S. Crane, Atty.

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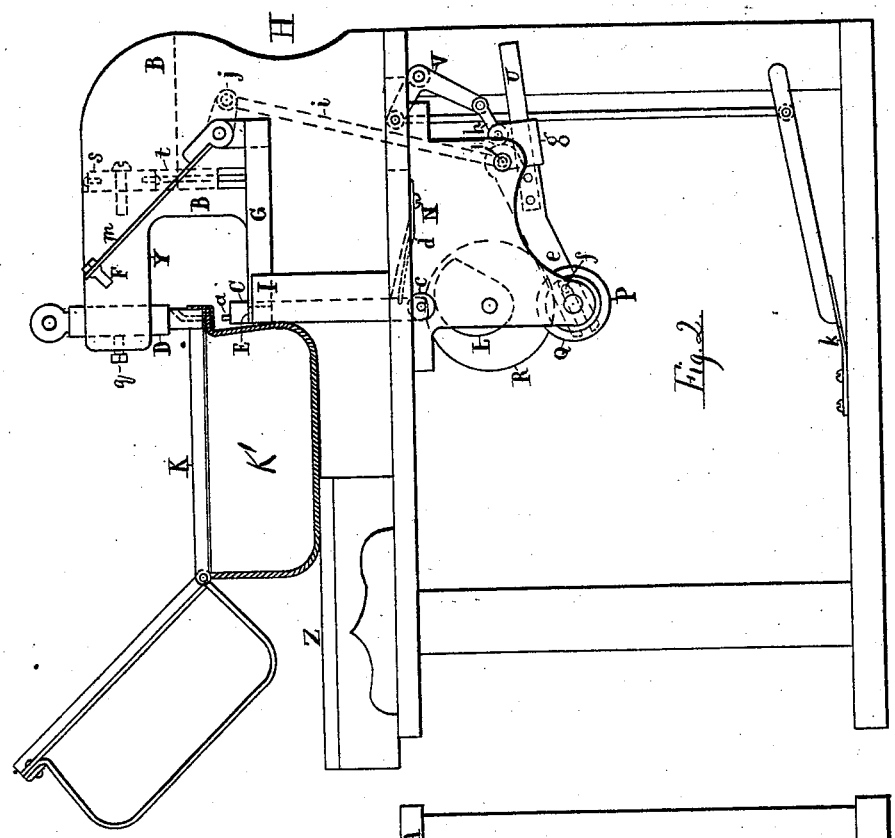

Fig. 2.

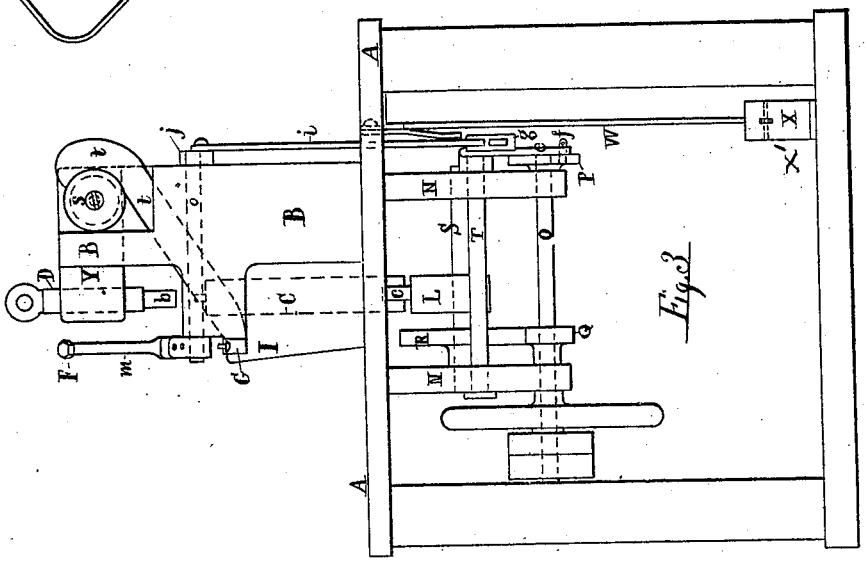

Fig. 3.

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UNITED STATES PATENT OFFICE.

ROBERT W. CHAPMAN, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN BAG-FRAMING MACHINES.

Specification forming part of Letters Patent No. **207,714**, dated September 3, 1878; application filed April 13, 1878.

To all whom it may concern:

Be it known that I, ROBT. W. CHAPMAN, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Framing Bags, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to an improved method of securing the frames or jaws of traveling bags and satchels to the stuff of which they are commonly made.

The stuff is commonly secured to the frame by pins, and, to prevent the heads of the pins from pulling through the leather, canvas, or other material of which the body of the bag is made, a strip of metal called an "inlay" is fitted inside the frame, and the stuff is clamped between the flange of the frame and inlay by the pins passing through both and riveted down upon the surface of the inlay inside the frame.

The frames of the bags are of various shapes, and are commonly provided with handles, locks, and trimmings before the stuff is fitted to the frame and secured in place by the inlay.

The total length of the inlay in a large bag is over eighty inches, and, to make the rivet-holes in both inlay and frame correspond with the required exactness, a large press has to be employed, which will punch all the holes in either frame or inlay at once, and all the frames and inlays of a certain size being thus punched, it is obvious that the holes will properly agree.

The material of the bag, however, when inserted between the frame and inlay, is not commonly provided with any holes, as it has to be gathered and arranged to some extent to shape it to the required form, and for this reason an ordinary rivet cannot be inserted into the holes, but a pointed pin with a rivet-like head is forced through the leather or canvas between the frame and inlay, thereby making a hole for itself in exactly the right place.

The material when arranged into the right position at the corners of the frame can thus be immediately secured by such a pin; but to change the pin into a rivet requires that the operator should cut off the point and surplus length of the pin, and then head it properly with a riveting-hammer on a block or anvil. The cutting off of these pins requires considerable time and labor, besides sacrificing about thirty per cent. of the metal bought with the pin, and, as the pins cost more than suitable rivets, the real expense, counting the metal lost, is much greater than what is needful for proper rivets.

My invention obviates the necessity of punching the frames and inlays for the rivets by the costly method specified above. It also obviates the necessity of using pins instead of rivets, with the loss of metal and money consequent thereon, and it also saves the labor of the operator in cutting off the points of the pins and heading them over on the inlay by hand. The inlay being sometimes strained out of place by the variable thickness of the stuff, a great deal of trouble is required to bring the holes opposite those in the frame, and the workman, in addition, needs to pierce the holes in the stuff with an awl and fit the pin into them with a great deal of trouble.

My method also obviates this trouble and labor by punching the holes in the frame and inlay simultaneously, while the operator keeps the stuff in place between them, so that the stuff also is perforated, and of necessity at the same place as the hole in the frame, so that no difficulty is experienced in using a common rivet to hold the inlay and frame together.

To avoid the formation of any burr upon the outside of the frame, I prefer to punch the hole from the outer side of the same into and through the stuff of the bag and inlay; and I also find it an advantage to have the rivets supplied automatically to the anvil upon which they are to be headed, and the heads formed upon them by suitable mechanism, so that the operator's hands may not be withdrawn from the care of the stuff, which needs to be held carefully in place while each rivet-hole is punched and the rivet set in its place.

The great difficulty in effecting these two operations by suitable mechanism lies in the fact that to work with rapidity the mechanism must lie between the operator and the bag, and needs to be so arranged that it shall not prevent his seeing the progress of the work. The larger sizes of bags are very heavy, and, were they to be applied to a punch situated before the operator on a small stand, he would

find it impossible to support all the parts of the bag opened widely, and keep the stuff and inlay in place to be punched with the frame. He would also find his arms too short to reach to the punch, if a table were provided in front of it and the open bag laid out flat thereon. I have therefore devised a machine of such a character that the operator stands behind the machine, and reaches around each side of it to manipulate the bag, which lies in front of the machine on a table at a convenient height below the punching and riveting mechanisms. I also connect these mechanisms with treadles secured in such positions as to be readily reached by the foot of the operator, thus adapting the machine specially to be used in the manner herein described.

The bag-frames being very narrow, it is necessary to construct the punch so that it may make a hole very close to the front of the machine, and the anvil also must be arranged so that the rivet may be headed in a frame often only half an inch wide, while the body of the bag hangs down before the anvil in close proximity to the rivet and its support.

The hole must be punched upward from below, so that the point of the rivet may be exposed when the original rivet-head rests on the anvil, and the frame of the machine must be shaped to admit the handles and trimmings of the frame, which are all secured to it before the stuff or body is riveted in.

These various arrangements are plainly shown in the drawings annexed hereto, of which Figure 1 is a plan of the machine and table, Fig. 2 an elevation of the left side of the same, and Fig. 3 a rear view.

A is the table, which may be made a part of the bed-plate of the machinery, or a wooden platform around the same. Its size is adapted to hold a bag, when open, in any desired position before the machine.

B is the frame or stand of the machine, carrying a punch-slide, C, a die-holder, D, an anvil, E, a riveting-hammer, F, and a rivet-chute, G.

To enable the operator to see the parts of the bag and frame which are being punched or riveted, the punch *a*, die *b*, anvil E, and hammer F are arranged to operate at one side of the stand B at its front end, the stand being constructed at that point with a seat, I, extended forward and to one side of the stand, the anvil E being located on the extreme corner of the seat, and the punch-slide C being inserted in the front edge of the seat, as closely to the edge as possible, and conveniently near to the anvil, so that the operator can readily transfer the frame thereto after a rivet-hole is made by the punch. By this arrangement, the punch and anvil or rivet-seat are fully exposed to the view of the operator standing behind the machine at H.

The stand B may be of any convenient shape, and may, if preferred, be constructed, with an arch extending entirely over the seat I, and supported by a column (or upright equivalent to stand B) at its outer extremity, leaving an open space between the two legs of the arch, through which the work could be seen as desired.

Whatever the arrangement, provision may easily be made for supporting the die-holder D, so that there is room beneath and behind the same for the handles, locks, or other attachments to the frame K.

To bring as few of the moving parts into view as possible, and thus obstruct the work of the operator to the least degree, I arrange the mechanism for working the punch and hammer beneath the stand B, providing a cam, L, to work the slide C, and a reciprocating lever, U, to vibrate the hammer F. Two hangers, N, secured beneath the stand B, support a driving-shaft, O, which has a crank-disk, P, secured to one end, and receives the needful motion by a pulley at the other end. A gear, Q, secured on this shaft drives a gear, R, upon another shaft, S, which is supported by the same hangers above shaft O. Shaft S is geared to run slower than O, and the cam L, being secured to it, pushes the punch-slide C upward by pressing against the roller *c*, secured in its lower end. The slide is retracted by a spring, *d*, secured beneath the stand, and arranged to keep the roller *c* firmly against the cam L by drawing the slide downward. A projection from each of the hangers supports a rock-shaft, T, at one side of shaft O, and a slotted lever, *e*, is secured to the rock-shaft, and arranged so that a crank-pin, *f*, in the disk P enters into the slot and vibrates the lever *e* as the disk rotates.

A bar, U, is secured to the hub of the lever *e*, and a sliding box, *g*, is fitted to it, and connected by a link, *h*, to a bell-crank, V, which serves to draw the slide back and forth on bar U. The bell-crank has its horizontal arm connected to a rod, W, which depends beneath the table to a treadle, X, which, by means of the parts just described, enables the operator to move the slide *g* back and forth at his pleasure. The slide is constructed with two pins passing through its sides near the top, one of which holds the link *h* and the other, *l*, a rod, *i*, which passes upward through a hole in the bed or table A to a crank, *j*, secured upon a hammer-shaft passed transversely through stand B about the level of the anvil E. The bar U is so constructed, being attached to lever *e* a little beyond the center of its hub, that the pin *l* in slide *g* can be moved just opposite the center of rock-shaft T when the slide is at its innermost position.

The bar U receives a constant vibrating movement from disk P through lever *e*, and it is thus evident that the rod *i* will be moved up and down and the hammer-crank *j* be vibrated in proportion as the slide is drawn out on the bar U toward its outer end.

The treadle is attached to the floor by a spring, *k*, which keeps it constantly lifted, thus tending, by the bell-crank V and its connections, to throw the slide to its innermost posi-

tion (and bring the hammer-crank to rest) whenever the foot is removed from the treadle.

The hammer-helve *m* is made of a thin steel spring or slender rod, so that it will have considerable spring, and the head F is preferably made detachable, so that a head can be used with a cup face on it, or a narrow riveting-peen, as may be preferred.

The hammer-shaft *o* projects from the side of stand B nearest to seat I, and the hammer-helve is secured to the shaft in a line with the anvil E, so that the hammer will always strike upon a rivet resting on the anvil, while the position of the hammer when at rest is arranged not to interfere with the view of anvil E. The rock-shaft T, with the center of which the pin *l* in the lower end of the hammer-rod *i* coincides when at rest, is so located that the hammer is elevated about forty-five degrees above the anvil E when at rest, and the table A being, in practice, about forty inches from the floor, the hammer *n* is too high up to obstruct the view of the anvil E, the arrows *p* showing the line of vision from the rear of the stand toward the punch *a* and anvil E.

The die-holder D is carried by a goose-neck, Y, which curves forward and sidewise from stand B to a point over the center of the punch. The die-holder is fitted into a round hole in neck Y, and may be secured by a set-screw, *q*, or a jam-nut at its lower end. The punch is secured in the top of slide C in any desired manner, and the slide is so proportioned that the top of the punch draws downward a little below the top of seat I, thus pulling the punch with certainty out of each hole punched in the frame, and avoiding the use of any stripper, which would interfere greatly with the introduction of a frame encumbered with handles, &c.

The rivets for holding the inlay sometimes coming into close proximity with rivets already inserted in the frame to hold the trimmings, it is necessary that the face or top of the anvil should be very small to fit in between such projections; and I therefore make the anvil very narrow in its breadth, and cut away the seat at each side of it a little to afford room for rivets already secured in the frame.

To further accommodate the various trimmings and projections on the frame, I terminate the seat I very close to or immediately at the side of the anvil, thus leaving the anvil on a projecting corner of the machine. The bag may then be applied to the anvil diagonally, as shown in the plan in Fig. 1, and only the small portion of the frame resting on the anvil be in contact with the machine at all. This position for the bag affords another advantage—that the body of the bag is more easily compressed when opposed to such a corner as the one described, and the frame is thus more easily drawn toward the rivet and held over the anvil than if the anvil were at some point in the middle of a straight line.

To accommodate the body of the bag more readily where it projects beyond the inner edge of the bag-frame K K, the front of seat I, near the punch and anvil, may be cut away toward the bottom when the stand rests upon the table A. In Fig. 3 the side of seat I is thus shaped beneath the anvil. In Fig. 1 the whole bag-frame is indicated by the letters K K; and in Fig. 2 is shown a section of the bag-frame K, with a handle, J, attached, the body of the bag being marked K′.

Such a bench will only answer for two or three sizes of bags, and, as that half of the frame upon which the work is being performed is supported by resting on seat I, a bench with inclined top may be used to sustain the other half of the frame, which never opens quite so far as is shown in the drawing after the body is attached. The inclined top of this bench adjusts itself readily to bags of any size or height above the table A.

In Fig. 1 the position of the operator is also indicated by the hands M of the operator, represented as extended from the point H and holding the frame on the anvil.

In the previous description I have indicated all the points in the construction of my bag-framing machine which were new; but as I do not claim any of the devices needed for feeding the rivets to the anvil automatically, I have not described them in detail. I have, however, shown a portion of them in the drawing, that the entire process may be understood, if used in connection with such automatic devices.

s is a feed-wheel secured in a recess formed in the top of stand B, and *t* a chute leading from the bottom of wheel *s* to the chute G, which runs from the bearing of the hammer-shaft to the anvil E. Chutes *s* and G are constructed with a groove fitting the head of an inverted rivet, the point of the rivet projecting upward from the groove.

A plain groove, fitting the stem of the rivets, being made in the edge of the feed-wheel *s*, it is plain that a rivet dropped into the rim of the wheel will be inverted if the wheel be turned, and by the force of gravity be discharged into the chute *t*, which is sufficiently inclined to feed the rivets thus received down to its intersection with chute G.

Any of the well-known devices may be employed to drop the rivets into the groove in wheel *s*, and afterward to carry them along chute G to the anvil, a clamp being used to hold them upright thereon until the hole in frame K is placed over the rivet, and the frame pressed firmly down on the anvil. A connection to the treadle-rod W may release the clamp and withdraw it from the anvil just as the hammer is set in motion by the foot of the operator.

Any of the well-known clutch devices used on punching-machines may be employed for connecting cam L to its shaft S, thus leaving it at rest until the operator has arranged the frame-stuff and inlay for being punched. Such a clutch would always stop the punch in its

lowest position out of the way, and could be started at pleasure by a rod and treadle located at X′ beside the treadle X. The hammer could be operated by connecting the link *i* directly to the crank-pin on disk P, and providing a clutch to operate shaft O at intervals, as desired, under the control of treadle X; but the method described above is preferable, as the force of the blow can be graduated to a nicety by the position of slide *g* on the lever-bar U. I do not, however, consider the levers *e* and U and slide *g* as essential elements of the hammer-operating mechanism.

I have already explained how the construction of my machine enables me to dispense with any stripping devices, and I will now show how I also dispense with any guides for punching the exact center of the inlay, thus securing entire freedom from encumbering pieces under the neck Y. I construct the die *b* with a round shank, making its diameter of the breadth of the inlay, and long enough to reach down to the surface of the inlay inside the flange of the frame K, which is always made of a right-angled section. The largest frames are about seven-eighths of an inch wide, and the die, being fixed about an inch and a quarter above the seat I, affords ample room to introduce the frame beneath the die. The inlay lying inside the frame is lifted up against the die to be punched, and, the flange of the frame being kept in contact with the stem of the die, the hole must always be made in the middle of the inlay, the die being always made to suit the width of the inlay to be punched; or the die may be made to fit the width of the smallest frames and adapted to use with larger ones by fitting a collar of the right diameter around the end of the die which touches the bag-frame.

The operator, although the end of the die is hidden from view by the flange on the bag-frame, can readily judge where the holes will be punched by the appearance of the die above the frame. I call this mode of making the die a "gage shank," as the shank or body of the die serves as the gage for setting the frame.

By the description above it will be seen that the operator may have his hands entirely at liberty to manipulate the frame K with the inlay and material to be secured between the two, as I have shown how the hole may be punched in the frame and the same placed over a rivet provided on the anvil, and the riveting done by a hammer actuated by the motions described.

I have also shown the necessity of punching the frame from the outside, of a table to support the bag, and the placing of the punch and anvil between the operator and the bag, as he could not guide them to the machine if separated therefrom by the width of a large bag opened to secure access to the inlays inside the frame. I do not therefore limit myself to the precise construction and operation of either punch or hammer, considering the arrangement of those tools in relation to the operator and the bag-frame as the point of greatest importance.

I therefore claim, and desire to secure by Letters Patent, as follows:

1. The combination of the slide C, provided with the punch *a*, and adapted to be operated in the lower part of the stand B, and the neck Y, provided with stationary die *b* on the upper part of the stand B, for piercing the rivet-holes in the frame K from the under side, as herein set forth.

2. The combination, in a bag-framing machine, of the punch *a* and punch-slide C with the riveting-hammer F, arranged to operate on the anvil E on the corner of seat I, as herein set forth.

3. In combination with the anvil E, the hammer F, helve *m*, shaft *o*, crank *j*, link *i*, slide *g*, bar U, lever *e*, disk P, shaft O, and connections to treadle X for regulating the movements of the hammer, as herein set forth.

4. The bag-framing machine constructed with anvil E and punch *a*, supported by seat I in front of and at one side of the machine, die *b*, supported above the punch in front of and at one side of the machine, cam L and punch-slide C to operate the punch, and shaft O and its connections to hammer F, substantially as herein set forth.

In testimony that I claim the foregoing I have hereto set my hand this 10th day of April, 1878, in presence of two witnesses.

ROBERT W. CHAPMAN.

Witnesses:
EDWARD P. ROBERTS,
THOS. S. CRANE.