

I. A. HEALD.
CIGAR MACHINE.

No. 113,880.

Patented Apr. 18, 1871.

Fig. 1.

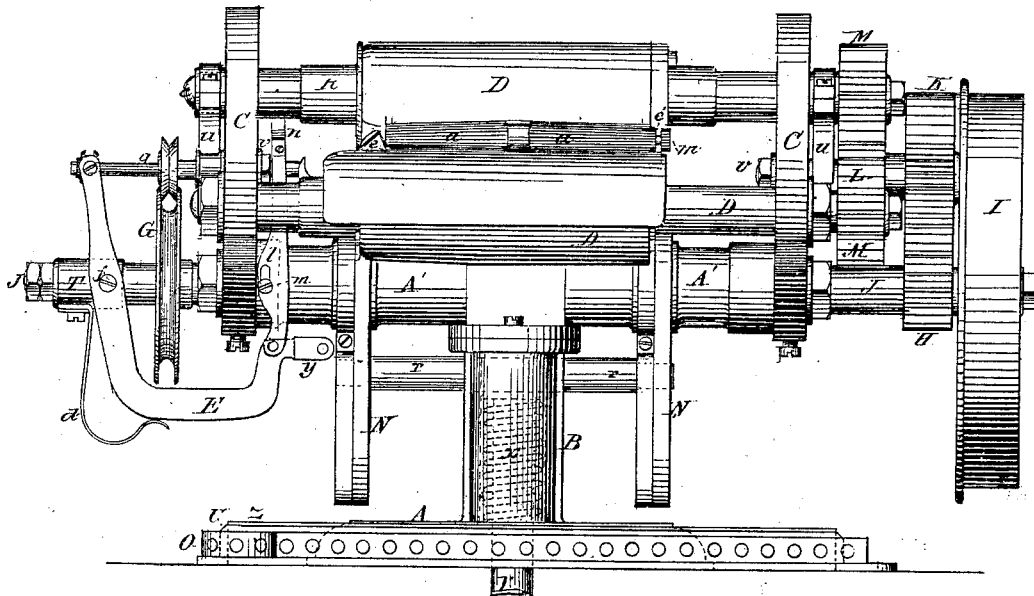


Fig. 2.

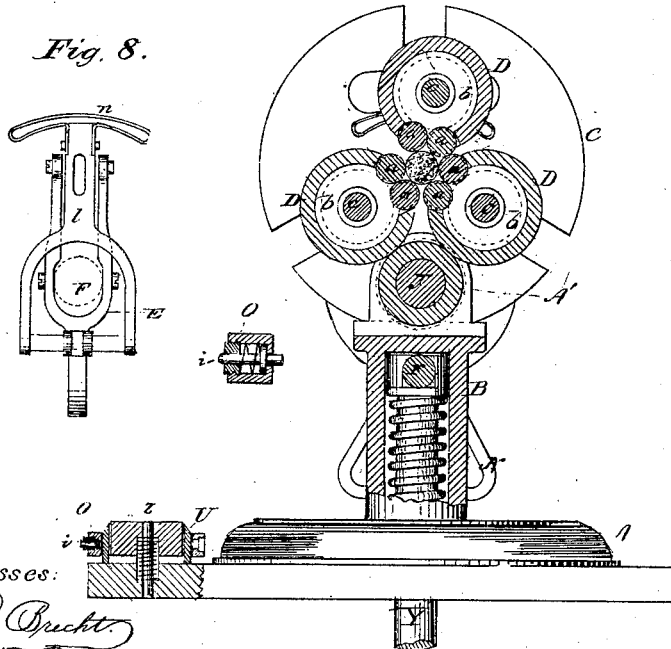


Fig. 8.

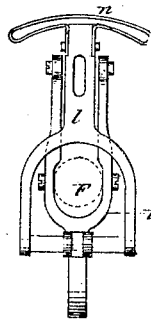


Fig. 9.



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Fig. 3.

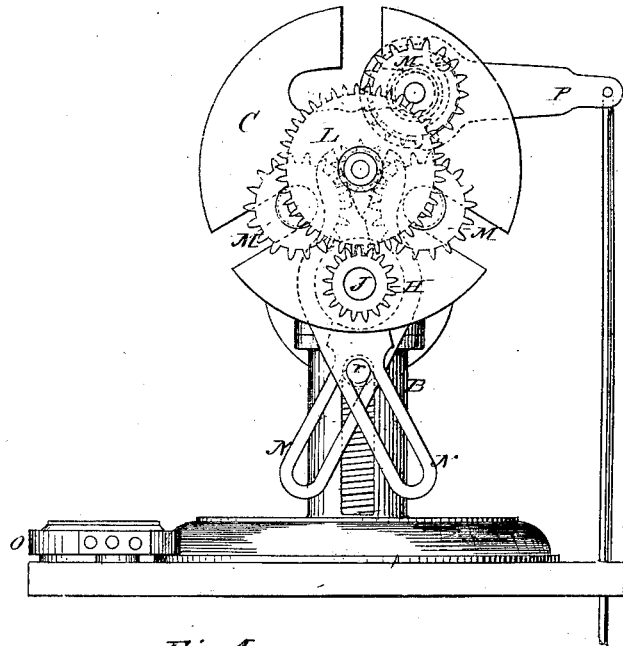


Fig. 4.

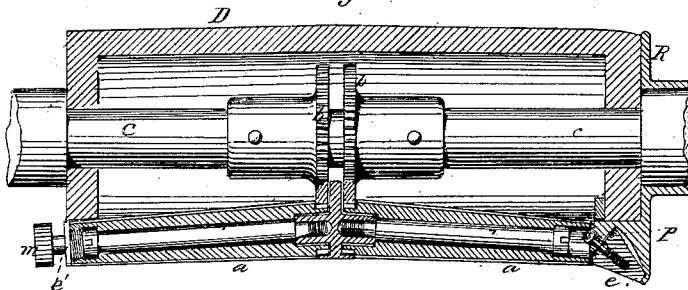


Fig. 5.

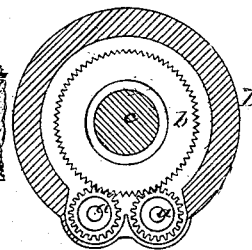


Fig. 6.

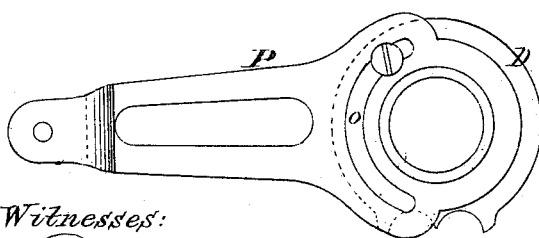
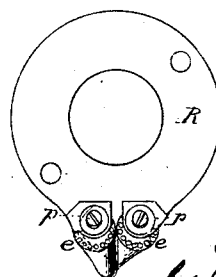


Fig. 7.



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Fig. 10.

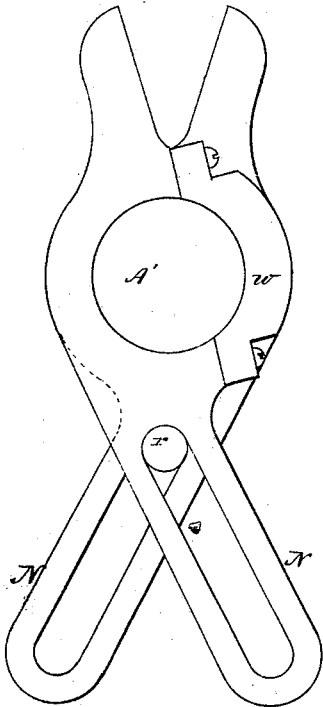


Fig. 11.

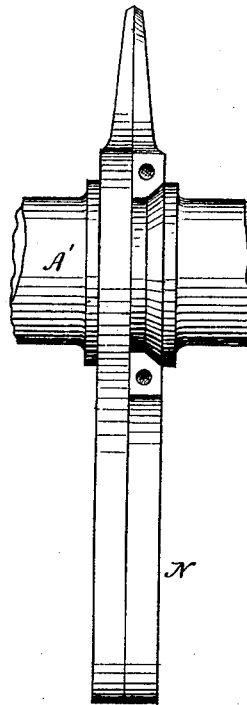


Fig. 12.



Fig. 13.



Fig. 14.

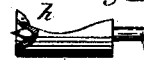


Fig. 15.



Fig. 16.

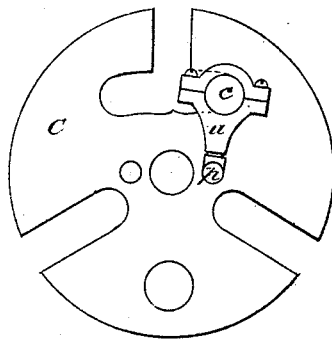


Fig. 17.

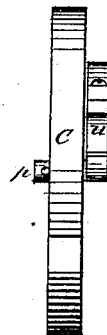


Fig. 18.



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ISSACHAR A. HEALD, OF LOWELL, MASSACHUSETTS.

Letters Patent No. 113,880, dated April 18, 1871.

IMPROVEMENT IN CIGAR-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ISSACHAR A. HEALD, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Cigar-Machines, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to improvements in machines for making cigars; and

The invention consists in a new construction and arrangement of the various parts or devices constituting the machine, as hereinafter more fully explained.

Figure 1 is a front elevation of the complete machine.

Figure 2 is a transverse vertical section of the same taken through the center.

Figure 3 is an end view, with driving-wheel detached.

Figures 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18 are views of detached portions shown more in detail.

Various plans have heretofore been invented by myself and others for rolling the body or filling of cigars, but in all such cases where rolls have been used to make a taper cigar the rolls have been concave, in which case the larger portions of the rolls, which necessarily come in contact with the smaller portions of the cigar, travel at greater surface velocity than the smaller portions, which were in contact with the larger diameter of the cigar, and hence some portions of the surface of the rolls had to slip on or twist the surface of the cigar.

The first and most important part of my present invention has for its object to remedy this difficulty by providing rolls of such a form and construction that their surfaces at all points shall travel at precisely the same velocity as the corresponding or adjoining surface of the various parts of the cigar or filling being rolled.

To do this I make the rolls *a* in two parts, divided at the center of their length, of a uniform taper from end to end, as shown in figs. 4 and 9, the latter representing one part detached.

These two parts are placed with their larger ends at the center, as shown in figs. 1 and 4, and are mounted so as to revolve freely on central bolts *t*, which extend lengthwise through the rolls *a*, and have their inner ends screwed firmly into a solid bearing formed for them midway of the shell *D*, which supports them and their driving-shaft and gear, as shown in fig. 4. This shell *D* is cast hollow, with its ends closed, and with a diaphragm or cross-piece at

the center to form a bearing or support for the attachment of the rolls *a*, as above stated.

A hole is bored at the center of each end of the shell *D* to permit the insertion through it, and to form bearings for a central shaft, *c*, which has secured upon it, at opposite sides of the diaphragm, within the shell, pinions *b*, which gear into corresponding teeth formed on the rolls *a* at their inner ends, as represented in figs. 2, 4, and 9.

As shown in fig. 4 more clearly, the rolls *a* are mounted in an opening cut in the side of the shell, of proper size to receive two sets of the rolls, the surfaces of the latter protruding from the side of the shell *D*, as shown in fig. 5.

The shell *D* has a tubular arm or prolongation extending outward from each end, by which it is held, as hereinafter explained; and the central shaft *c* protrudes through these, and at one end has secured to it a pinion, *M*, by which it is driven.

The rolls *a* are intended to form the body of the cigar, and to form the pointed end of the same I use in connection therewith a series of small conical rolls, *e*, corresponding in number with the rolls *a*.

These conical rolls *e* are provided with small holes around their larger ends, as represented in fig. 7, into which correspondingly-formed teeth on the small ends of rolls *a* engage, the rolls *e* being mounted on journals *p* in a cap, *C*, which fits on the tubular arm of the shell *D* and holds the rolls *e* in the proper position in relation to rolls *a*, as shown in fig. 4—fig. 7 representing the cap *C* with its rolls *e* detached from the shell.

It will be observed that in fig. 4 these rolls *e* are represented as having their extreme points cut off, thus forming a truncated cone. This is for the purpose of enabling the tip of the cigar to be cut off, and also punctured, by devices to be hereinafter described, before it is removed from the machine.

In case, however, it is desired to dispense with these operations, and form a cigar with its small end terminating in a perfect point, then I use rollers which are a perfect cone, as described in my former patents. I sometimes, also, use the two styles of conical rolls together for forming a pointed cigar—that is to say, I use a roller in the form of a perfect cone in connection with one that is a truncated cone; but, when this is done, the truncated roll must be fully as long as the other, and they must be so arranged that when the series of them are brought together the space between them will terminate in a point corresponding with that intended to be formed on the cigar.

The principal point of novelty, however, in this case, is the manner of mounting and driving these

conical rolls by a positive motion, they having heretofore been driven by friction alone.

To construct a working machine I use three of these shells, each provided with two sets of the rolls *a* and *e*.

To support these parts and bring them in proper relation I provide a frame, which consists of a suitable base, A, from which rises a tubular column or shank, B, with a transverse sleeve, A', extending laterally to the right and left from the top of the column B, as shown in figs. 1 and 2.

At its outer ends this sleeve A' has secured rigidly an upright head-piece or disk, C, as shown in figs. 1, 2, and 3, these disks or heads having radial slots extending inward from their periphery, in which the shells D are secured by their tubular arms, and held by nuts on their ends, as shown in fig. 1.

By thus mounting the three shells D with their rolls all turned inward toward the center, the six rolls will be located in a circle with a central space between them, as represented in fig. 2, this central space being intended to receive and hold the cigar-body or filling while being formed into the required shape, and also while the wrapper is being applied. This central space can be varied to make cigars of different sizes by simply adjusting the shells with their rollers in the slots of the heads C.

In order to afford a means of getting the cigar into and out of this space the upper shell D with its rolls is not secured tightly in its slots in the heads C, but instead is mounted in swinging supports *u* at each end, these supports being journaled on eccentric studs or wrists *v* secured to the heads C, as shown in fig. 1, so that by turning these eccentric wrists the shell with its rolls will be drawn toward or thrown from the center, and thus its adjustment made to correspond with that of the other two, which latter are adjusted as before stated by moving them in their slots.

The upper slot of the heads C extends into and connects with a curved slot which extends some distance to each side of the radial slot, as represented in figs. 2 and 3, thus permitting the upper shell to be swung over to the front or rear, as may be desired.

In fig. 3 it is shown thrown back, thus making an opening at the front, through which the tobacco forming the body of the cigar may be entered, and through which also the finished cigar can be taken out.

The heads C are provided with holes for the eccentric pin on each side of the center, so that when it is desired to change the opening from the front to the rear, or *vice versa*, the pins are simply moved from one to the other side of the center.

In order to operate this shell there is an arm or lever, P, secured to it, as represented in fig. 3, this arm being provided with a curved slot, O, and secured by a set-screw, as shown more fully in fig. 6, the slot O extending nearly half way round, so as to permit the arm P to be adjusted to project from the opposite side, and thus enable the machine to be operated from either front or rear side. This arm is to be connected by a rod with a treadle below the table so as to be operated by the foot.

For the purpose of finishing the pointed end when the wrapper is applied, I use the conical socket or former described in my former patents; but I have arranged it so that when the upper shell is brought over to close the opening this socket or former will be automatically brought up against the end of the cigar opposite the central space at the termination of the conical rollers, and be automatically thrown back again as the shell is thrown back to open the space.

This former *h*, fig. 1, I mount on the inner end of a sliding rod, *g*, which extends through the center of

the left-hand head C, its outer end being pivoted to a rocking frame, E, which is pivoted upon a sleeve, T, secured upon the end of shaft J outside of the head C, as shown in fig. 1.

This rocking frame is bent at a right angle and extends inward underneath the head C, where it has connected to it a bifurcated standard, I, which latter has a curved spring, *n*, secured transversely to its upper end, the form of this standard and spring being shown more fully in fig. 8. When thus arranged, it will be seen that this spring is brought into such a position that the arm of shell D will strike and bear upon it as the shell is brought forward, and thereby automatically shove the rod *g* with the former *h* inward as the shell is brought forward to close the space.

A spring, *d*, is placed behind the frame E in such a position as to force the former back as soon as the shell D is thrown back, and ceases to press on the top of spring *n*. This latter spring is used to prevent the former *h* from being pressed in too far or too hard against the end of the conical rollers.

As shown in fig. 1, the inner end of the rocking frame E is provided with an extension or arm, *y*, to which a rod may be attached, connecting it with a treadle also, for operating it independently when desired.

I make the former *h* both right and left-handed, so that they may be used with the machine when operated from either the front or rear side, as previously described, for using wrappers cut from the right or left-hand part of the leaf.

I also construct these formers *h* with a small pin protruding from the center of their sockets, as shown in fig. 10, this pin serving to puncture or perforate the point of the cigar when being finished, and thus form a distinguishing mark for cigars made by the machine as a trade-mark.

I also propose to dispense with the former *h* in some instances where the pointed end is cut off, as will be presently explained, and in such case I attach to the rod *g*, instead of the former *h*, a larger and longer pointer, in order to make a still larger perforation in the tip of the cigar.

This pointer may also be used when the tip of the cigar is not cut off equally as well, it simply taking the place of the former *h* and being thrown in and out in the same manner, either automatically or independently.

In order to cut off the end of the cigar I provide a pair of shears, N, and journal them on the sleeve A', so that their blades shall project up alongside the end of the rolls *a* at the large end of the cigar, as shown in figs. 1 and 3. These shears I make with their handles slotted, as shown in fig. 3, these slotted handles crossing each other at an angle, as there shown.

To operate these shears, I locate within the tubular standard B of the frame a vertical rod, Y, supported by a spiral spring, as represented in figs. 1, 2, and 3, this rod extending down below the table or bench, and being connected to a treadle, not shown, to be operated by the foot.

Transversely through the head of this rod Y I secure a rod, *r*, which protrudes at each side through a slot in the standard B, and has its ends resting in the slots of the shear-handles, so that when this rod *r* is depressed by the treadle it will slide down in the slots of the handles and thus force the blades together, cutting off the protruding end of the cigar even with the end of the rolls *a*.

As shown in fig. 1, I propose to use a pair of these shears at both ends, so that, by the same movement, the tip and large end of the cigar may both be cut off at the same time, it being understood that the shears may be used at one or both ends, as desired; and that when used at the tip end the extreme end only

is to be cut off, so that the cigar is ready for use at once without the necessity of biting or cutting off the tip in the usual manner.

These shear-blades are made and mounted in a peculiar manner, for the purpose of enabling them to be kept tight together and to compensate for wear in the joint.

As shown in fig. 11, the bearing on which they are journaled is made conical, or has its sides beveled or inclined inward on each side, and the blades are formed at their bearing points in a corresponding manner.

The blades are each formed in two parts, so that they can be clasped around the sleeve on which they are journaled, the blade proper having one-half of the box or bearing formed in it and the other half being formed in a detachable yoke, box, or clasp, *w*, which is secured to the blade by screws.

When put on, these parts are so adjusted that the bearing is on the inclined portions of the journal and blades, and it will therefore be seen that, by tightening up the screws which secure the clasp *w* to the other part of the blade, they will act on the inclined shoulders of the joint, and thus tend to crowd the blades closely against each other.

In this manner I am enabled to compensate for all wear in the joint, and hold the blades firmly or snugly together, and thereby insure a clean square cut.

As shown in fig. 1, the rolls *a*, secured to the upper shell *D*, are made to protrude out over the points of the shears at the large end of the cigar, they being formed with a groove, *e*, for the point of the shears to work in, the protruding end *m* being left of the full diameter.

This construction of the rolls serves two purposes: first, the press upon the upper side of the cigar outside of the shears, while the latter is cutting off the end, thus holding it firmly in place, and preventing it from slipping away from between the blades as they close upon it, thereby insuring a clean square cut and giving a nice finish to the end of the cigar. They also assist to start the wrapper correctly when the latter is applied to the filling, the wrapping always being commenced at the large end and finished at the tip or small end.

In a former patent I have described an apparatus for cutting out the wrappers for cigars, and which device is to be used in connection with this machine also.

This apparatus consists of a knife, *U*, of the form of the wrapper, having a spring bed, *Z*, placed inside of it, as shown in section in fig. 13.

There is an open frame or clasp, *O*, of the same shape as the knife, and of a size to fit around the knife to clasp and hold thereon one or more leaves, while the wrappers are cut therefrom by pressing them down upon the edge of the knife by rolling over it a copper or other suitable roller.

To prevent this clamp *O* from tearing the leaves, and to enable it to be adjusted to different thicknesses or quantities of leaves, I now provide it with a series of small pins, *i*, which is inserted through holes bored through it all around, as represented in figs. 1 and 13.

These pins *i* are inserted in small tubes screwed into the clamp *O*, with a spiral spring arranged to keep the pins pressed inward, they being adjusted outward by screwing out the tube so as to make the inner ends of the pins *i* protrude slightly through on the inner side of the frame *O*, their inner ends being nicely rounded off so as not to tear the leaves.

By this improvement the frame is provided with a continuous series of points, which press upon the leaves and draw them down snugly and smoothly over the knife, thus enabling the wrappers to be cut

out in a more perfect form, and at the same time prevent injury and waste of stock.

To impart motion to the rolls I secure a driving-pulley or wheel on the end of shaft *J*, which has its bearings in and extends entirely through the sleeve or cross-head *A'* of the frame, there being a pinion, *H*, on the shaft, which gears into a wheel, *K*, secured to a sleeve, carrying also a pinion, *L*, which latter is located centrally between the pinions *M*, mounted upon the end of each of the shafts *c*, which extend through the shells *D* and communicate motion to the rolls *a*, as previously described.

As shown in fig. 1, there is a grooved pulley secured to the opposite end of shaft *J*, and a similar one on the stem *g* that carries the former *h* or the perforating point.

These pulleys are only to be used with the perforator, the object being to impart to it a rotating motion as it is pressed into the cigar.

The former *h* is intended not to rotate, but simply to slide in and out, it forming a stationary bearing in which the tip end of the cigar is finished by being revolved therein.

From the foregoing description the operation of the machine will be readily understood, it being similar in its general mode of operation to those previously patented to me.

Having thus fully described my invention,

What I claim is—

1. The rolls *a*, of a conical or taper form, arranged with their larger ends at the center, whereby the rolls and the cigar have those portions of their surfaces which come in contact moving at a uniform velocity, thus preventing the slipping of any portion of either upon the other, substantially as described.
2. The shell or frame *D*, having the rolls *a* mounted therein, in combination with the driving-shaft *c* and pinions *b*, arranged to operate substantially as described.
3. The conical rolls *e*, provided with the series of holes or cavities in their ends, in combination with the rolls *a*, having corresponding teeth formed on their ends, whereby the rolls *e* are driven by a positive motion and the joint between said rolls is kept closed, so as to prevent the tobacco from being caught therein, substantially as described.
4. The combination of the rolls *a* for forming and holding the cigar, with the shears *N*, arranged as described, for cutting off the ends of the cigar, as set forth.
5. The conical bearing or joint formed on the outside of one or both blades, in combination with the adjustable clasp *w*, or its equivalent, for tightening up the blades, as described.
6. The shears *N*, having their handles or levers slotted and arranged as described, in combination with the rod *r* and the treadle-rod *Y*, or its equivalent, for operating the same, substantially as herein described.
7. The former or socket *h*, with the point or projecting pin at its center for forming and perforating the end of the cigar, as set forth.
8. The rocking frame *E*, pivoted as described, and having the former-shaft *g* and the vertical arm *l* attached thereto, with the cross-head or spring *n*, in combination with the swinging frame or shell *D*, arranged to operate as set forth, for automatically operating the former or pointer at suitable intervals.
9. The shell *D*, carrying the upper rolls *a* hung in the swinging arms *u*, journaled on the eccentric wrists *p*, whereby the shell with its rolls may be adjusted for different sizes of cigars, as set forth.
10. The rolls *a*, having the groove *e* formed therein, with their projecting ends *m*, substantially as and for the purposes described.

11. The heads C, provided with the radial slots, in combination with the adjustable shells or frames D for adjusting the rolls, as set forth.

12. The heads C, provided with the curved slot and adjustable wrist-pins p, whereby the machine may be changed to open at front or rear, as set forth.

13. The arm or lever P, provided with the curved slot C, in combination with the swinging frame or

shell D, to permit the arm to be changed to either side at will.

14. The clamp or frame O, provided with the yielding pins i, constructed and arranged to operate substantially as described.

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