

W. H. Abel.

Straight Knitting Mach.

N^o 83,583.

Patented Nov. 3, 1868.

Fig 1.

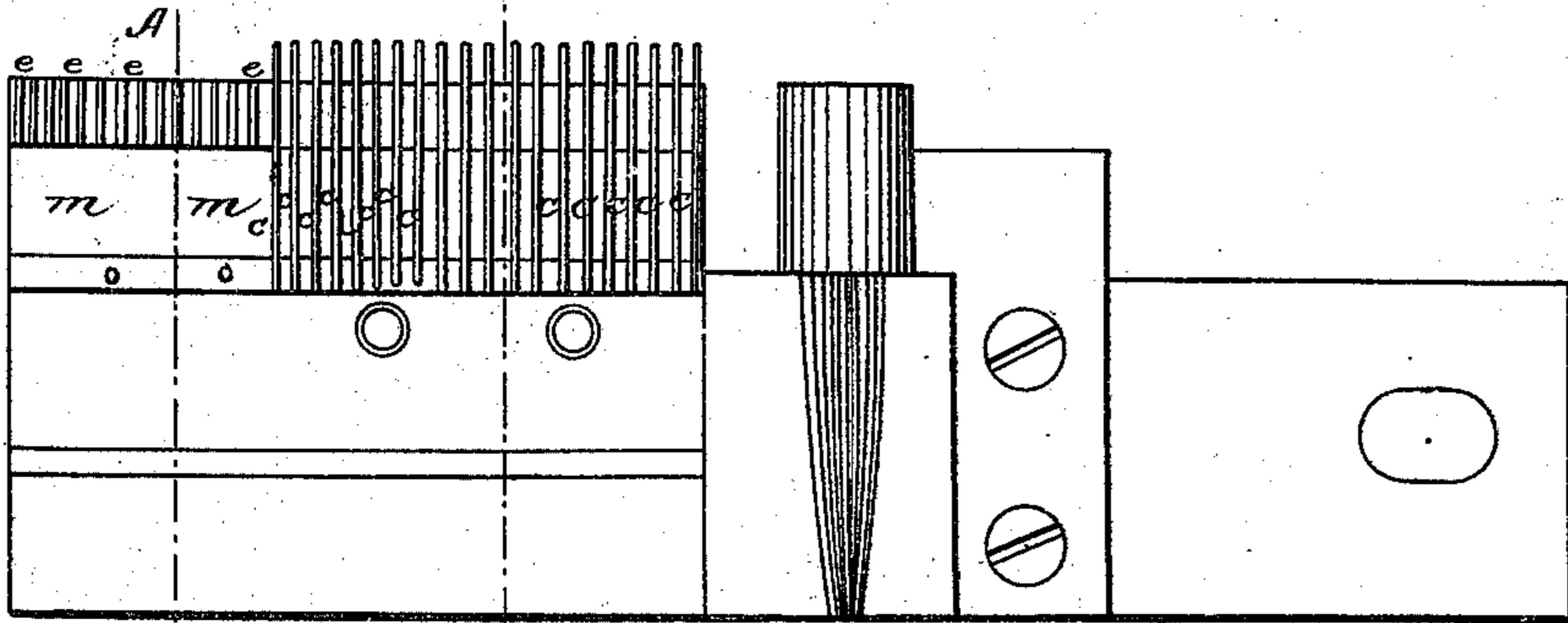


Fig 2.

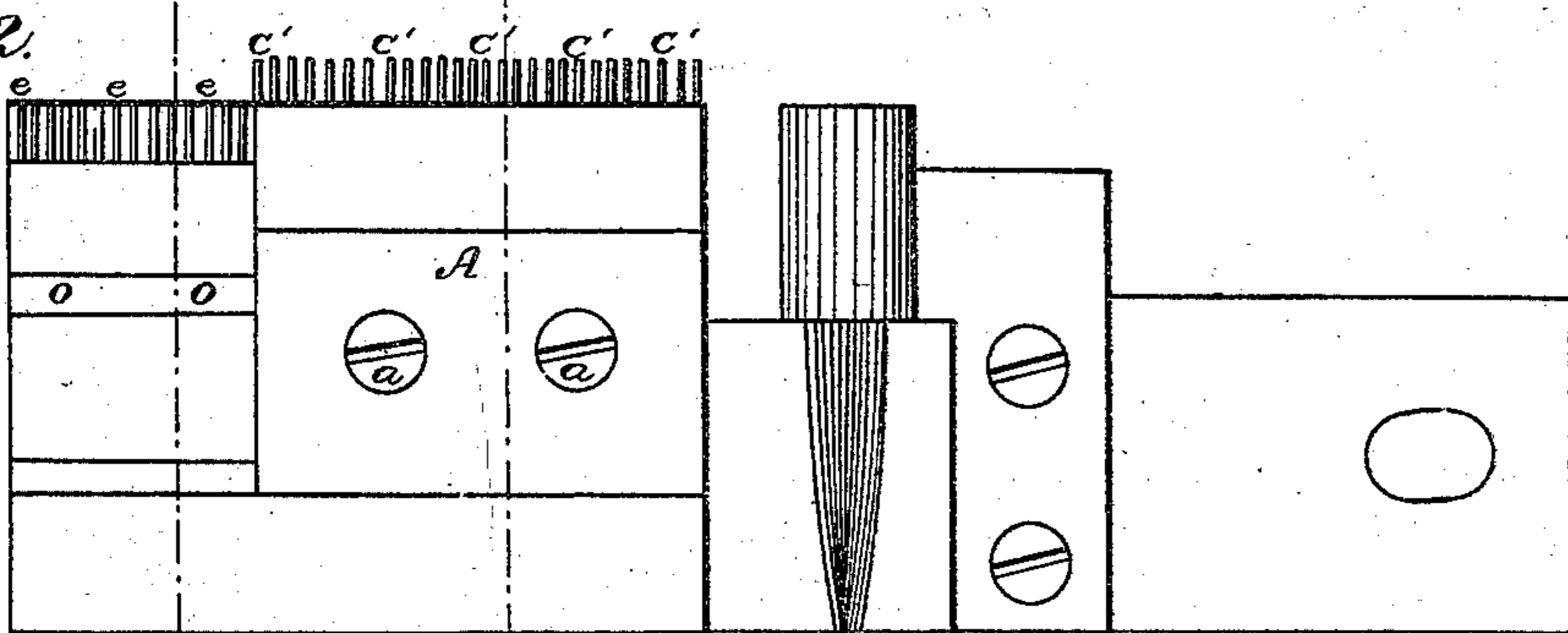


Fig 3.

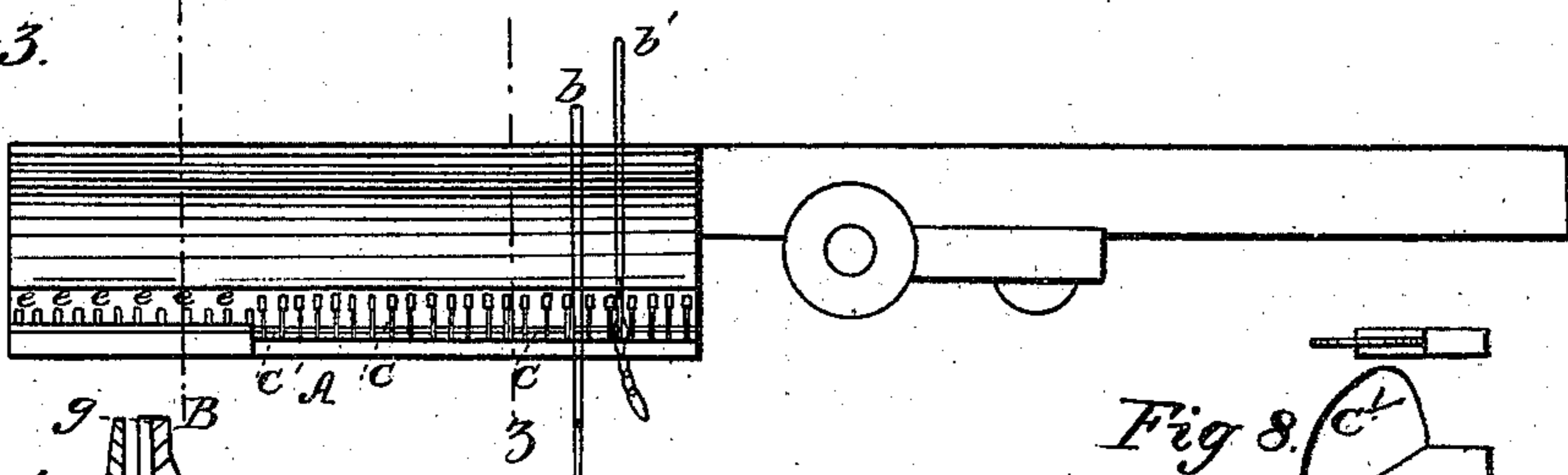


Fig 4.

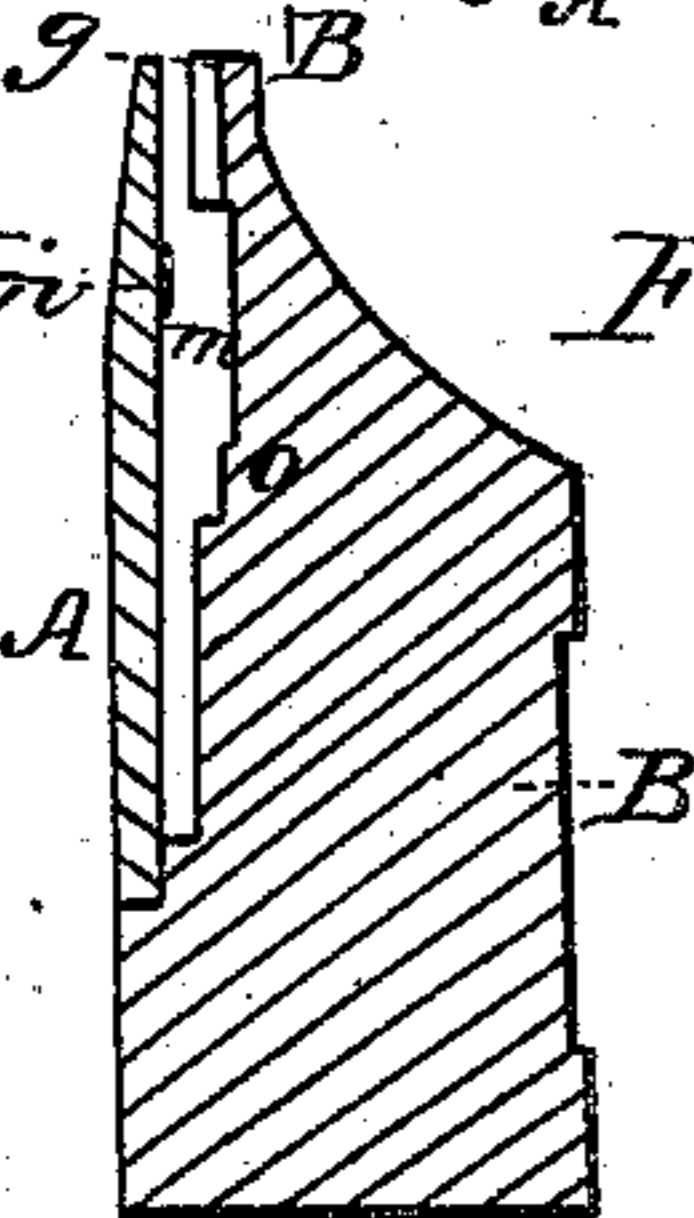


Fig 5.

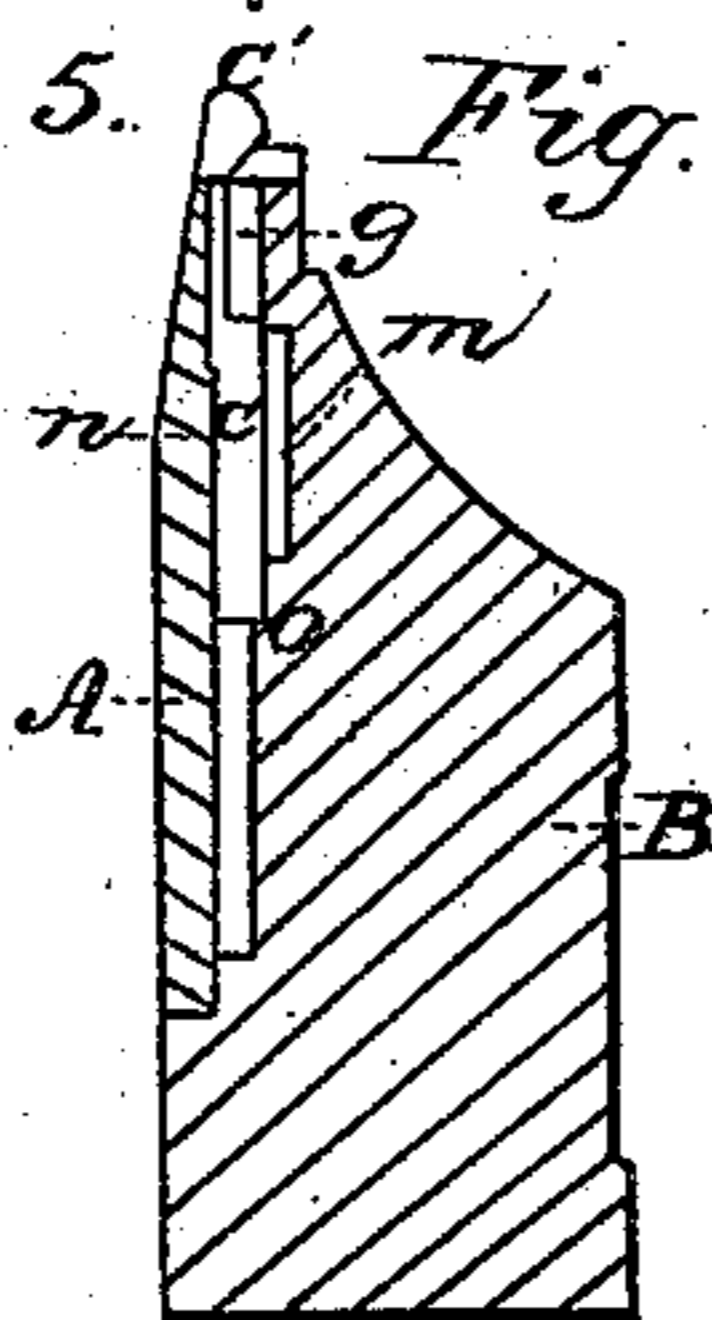


Fig 6.



Fig 7.

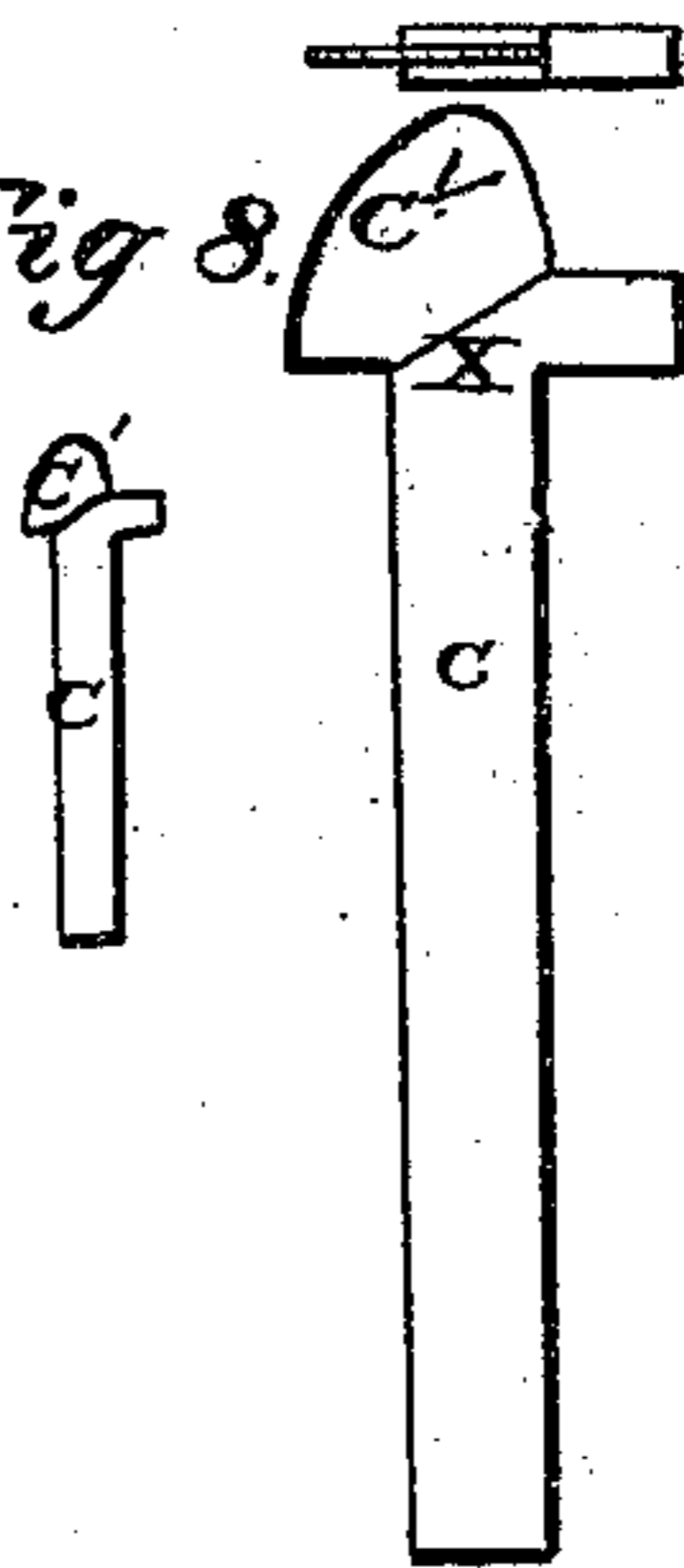
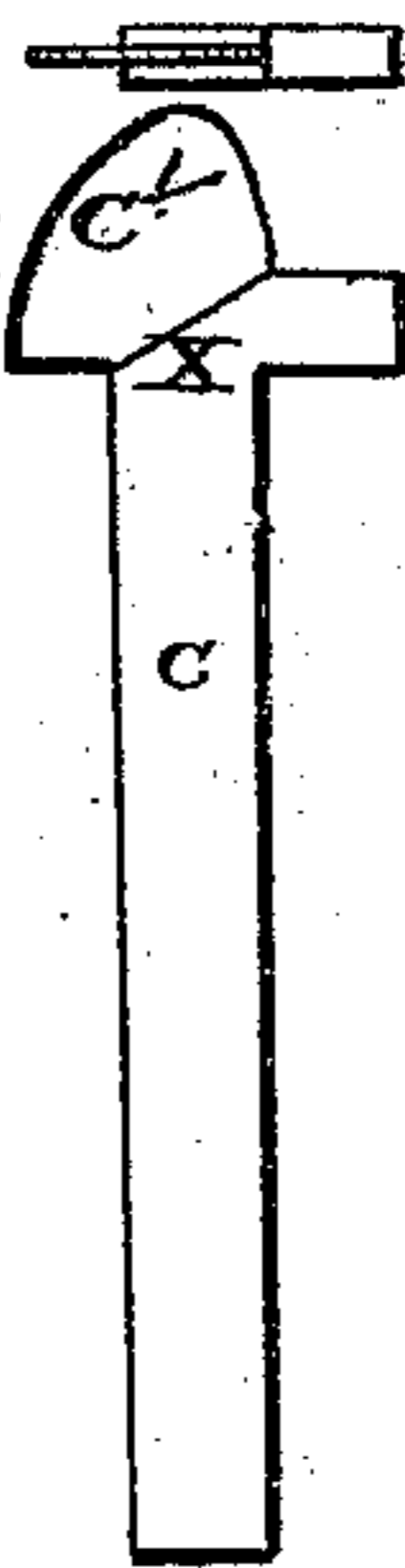


Fig 8.



Witnesses.

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WILLIAM H. ABEL, OF GREENVILLE, RHODE ISLAND.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. **83,583**, dated November 3, 1868.

To all whom it may concern:

Be it known that I, WILLIAM H. ABEL, of Greenville, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Knitting-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figures 1 and 2 are front-side elevations, the former with the clamp A removed, showing the knocking-over points *c*, and the manner in which they are applied. Fig. 3 is a top view, showing the top ends of the shouldered knocking-over points. Figs. 4 and 5 are transverse sections of Figs. 1, 2, or 3, the former on the line A B, and the latter, or Fig. 5, on the line Y Z thereof. Figs. 6, 7, and 8 are side views of shouldered knocking-over points, the former with a section of a clamp, A, as applied to the front side of said knocking-over points, or to a series of such shouldered knocking-over points, and a top view of Fig. 8, above the latter figure, which is enlarged.

This invention and improvement relate to that part of a knitting-machine called the "knocking-over bar," or the "drawing-over bar," to the new and peculiar kind of shouldered knocking-over points employed, and the mode of applying and clamping such knocking-over points to the said bar.

The object of this invention is to facilitate the application, the removal, and the replacing of knocking-over points, to economize in the manufacture and use of knocking-over points, to keep the needles in the centers of the spaces between the knocking-over points, and prevent the nipping of the loops between the heads of such knocking-over points, all as hereinafter described.

In all the ordinary knitting-machines where knocking-over points are used to form lateral guides for horizontal needles, such knocking-over points are fixed in blocks of lead, or other similar metal, each lead containing from ten to twenty, or more, straight knocking-over points, with the lead cast around them, (in a mold.) Each of these leads of knocking-over points is fitted and fastened to the front side of the knocking-over bar by screws, and when a single knocking-over point gets broken,

(which is a frequent occurrence,) the whole lead of knocking-over points has to be removed, and a new lead of knocking-over points substituted. The knocking-over points, secured in leads, as above stated, or otherwise secured, are generally broken, by the loops getting nipped between two knocking-over points, when the needles are drawn backward. This ordinary mode of applying the knocking-over points to the knocking-over bar is attended with much unnecessary expense, not only in the first application, but in removing and replacing broken knocking-over points, for if a single knocking-over point is broken, a whole lead of from ten to twenty, or more, knocking-over points has to be removed, and the knocking-over points thrown by as waste material, not worth the labor required to recover them when melting the old leads. These ordinary knocking-over points are made from metal plate, and are of the same thickness throughout, and the needles are moved backward and forward between the knocking-over points. Now, when the needles are drawn backward with the loops upon them, the said loops are very liable to rise up over the bar, and get nipped or wedged in between the needles and the ordinary knocking-over points, the result of which is, some of the loops are broken, leaving one or more holes in the web of fabric, and, in many instances, the knocking-over points are broken, and needles bent or broken, and greater injury to the fabric is the result.

To overcome all the above-described difficulties—that is, to cheapen the process of applying, removing, and replacing knocking-over points, and prevent the loops being nipped or wedged in between and broken by knocking-over points, or knocking-over points broken, or needles bent or broken—I make the knocking-over bar B with a lip, *g*, projecting forward from the top edge. In the substance of this lip I make numerous vertical or transverse notches or grooves, *e*, nearly as deep as the width of the knocking-over points *c*, grooving the front side of the bar B longitudinally, as shown in Figs. 4 and 5.

The knocking-over points are placed in and fill the notches *e*, the lower ends resting against the metal at *o*, and the upper or shouldered ends on the top of the bar B, and on the top

of the clamp A, applied to the front side of such knocking-over points, and to the bar B, to hold said knocking-over points firmly in the notches, the clamp A being fastened to the bar B by screws *a* passing through said clamp, and screwing into the bar, all as clearly shown in the drawings.

The knocking-over points *c* may be made with straight sides, as in Figs. 5, 7, and 8, and a longitudinal projection, *n*, formed on the inside of the clamp A, to bind the knocking-over points against the back side of the notches *e*, and the portion of the bar B at *o*, each side of a longitudinal recess, *m*, made in the bar B, back of the knocking-over points; or the projection *n* may be formed on the front sides of all the knocking-over points, as in Fig. 6, and then the insides of the clamp A may be straight or flush, and bear against the projections on the knocking-over points.

In Fig. 3 will be seen one needle, *b*, projecting forward to about the right position where the thread is laid onto such needles, and one needle, *b'*, drawn back, with a loop upon it, to between two knocking-over points, and to about the position where the loops are drawn over by the knocking-over bar. Here, it will be seen, the back shoulders of the knocking-over points are thicker than the central and higher portion, *c'*, and that the thicker-shouldered portions form a sure lateral guide for the needles as they are moved forward and back in the process of knitting. It will also be observed that the spaces between the heads *c'* of the knocking-over points and forward of the shoulders are considerably wider than between the shoulders, and that when the needles are drawn back with loops upon them, and if any of the loops are drawn upward over the top edge of the clamp A, such loops will be drawn into the wider spaces at either side of the needles, which are kept in the centers of the spaces by the shouldered portions. In this way I prevent the loops getting nipped or wedged in between the heads of the knocking-over points and the needles.

To widen or increase the width of the spaces between the heads of the knocking-over points, as described, I remove a portion of the metal from each side of every knocking-over point above the line *x*. (Seen in Fig. 8.) This thinner portion is the head *c'* of the knocking-over point.

When it becomes necessary to remove a damaged or a broken knocking-over point which has been made and applied according to my improvement, the screws *a* are slackened, and any knocking-over point covered by

a section of the clamp A may be drawn upward out of the notch *e*, another knocking-over point inserted in its place, and the screw or screws *a* tightened, to clamp all the knocking-over points firmly, as before, and all without disturbing any other knocking-over point, and without loss of time or waste of leads or knocking-over points.

The top edge of the clamp A, in this improvement, serves, in addition to the purposes above described, the same purpose of the plate *ff* in my former invention—viz., to relieve the strain or tension on the thread as the last loops formed at the top of the web are drawn over the smooth straight edge of the clamp when the needles are drawn back.

The knocking-over points described in this improvement can be made and applied at less cost than the ordinary knocking-over points when set in leads, and when a knocking-over point is broken, only that broken or injured knocking-over point is lost, instead of a whole lead of from ten to twenty, or more, knocking-over points, as in the ordinary mode of applying and using knocking-over points, or lateral guides to the horizontal needles in knitting-machines.

These improved shouldered knocking-over points can be set in leads in the same or in a similar manner of the ordinary straight knocking-over points, and still present enlarged or widened spaces between the heads *c'* of the knocking-over points, while the thicker back shoulders form sure lateral guides for the needles.

The ordinary straight knocking-over points, which are commonly set in leads, can be readily applied to the notched lip *g* of the bar B, and secured by the clamp A, and such ordinary knocking-over points can be as readily removed and replaced as the shouldered knocking-over points.

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

1. The knocking-over points constructed substantially as described, for the purpose specified.

2. The combination of the separately-removable knocking-over points, substantially such as described, with the bar B, having the notched lip *g*, clamp A, and screws *a*, or equivalent.

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Witnesses:

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