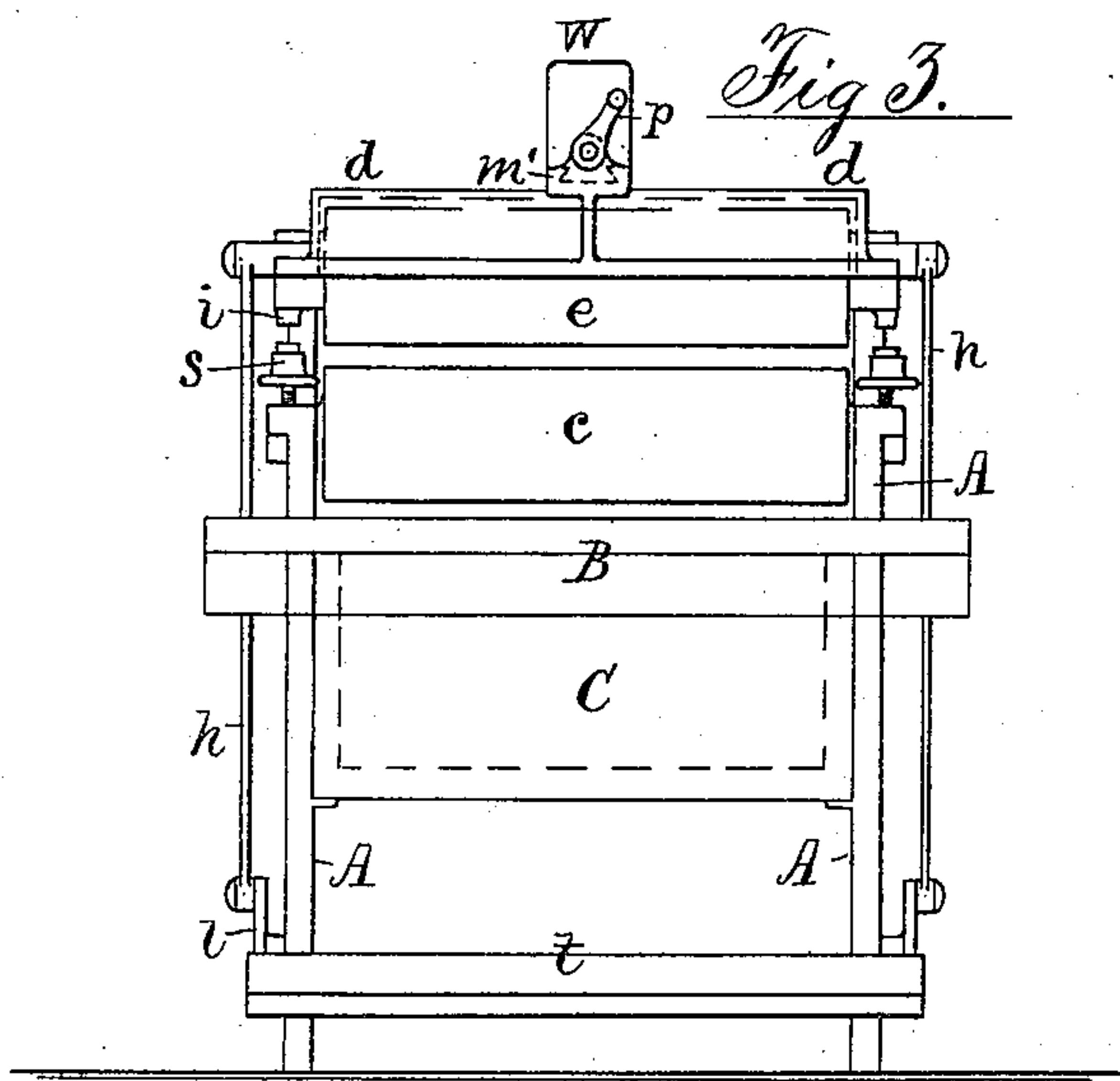
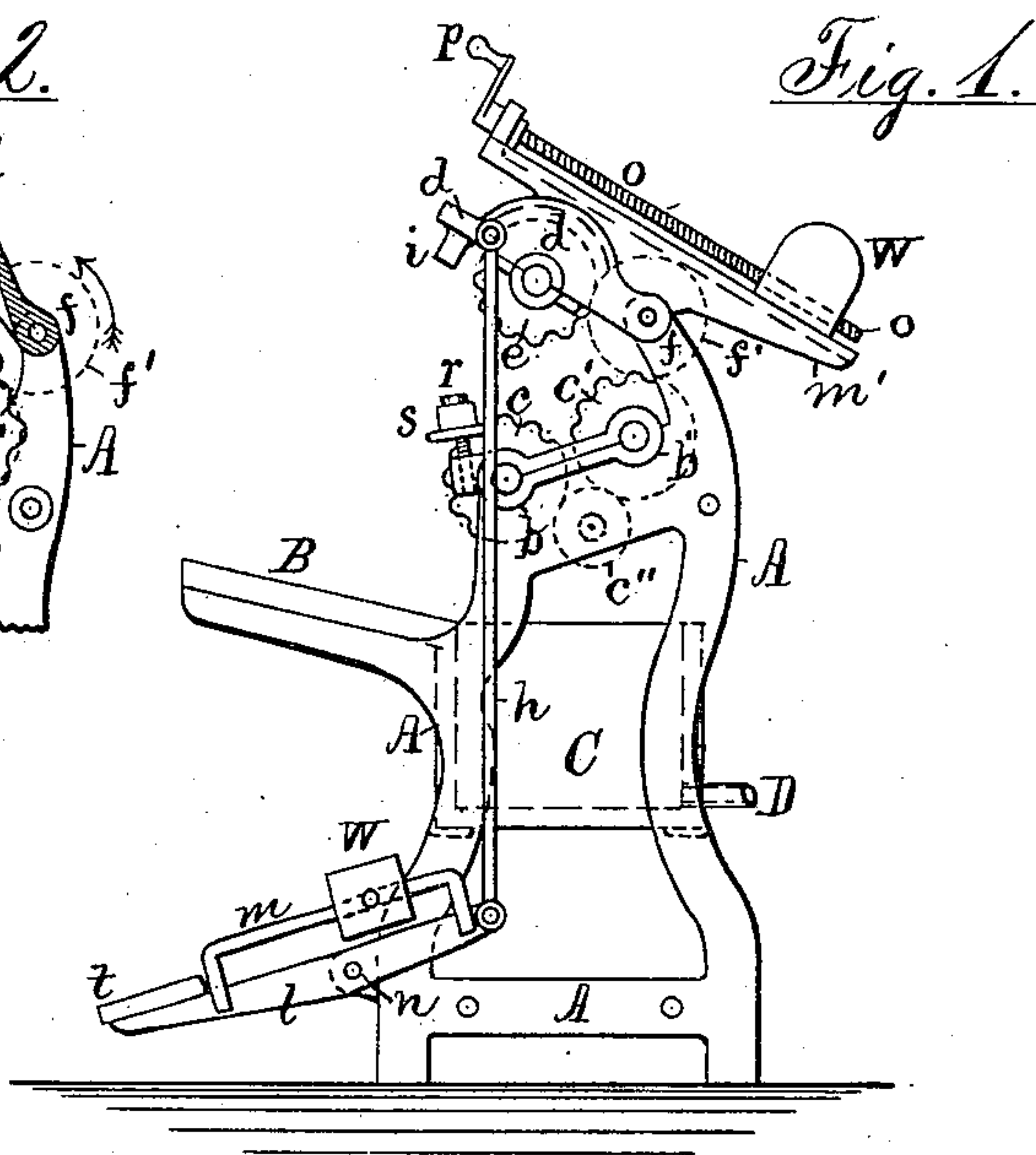
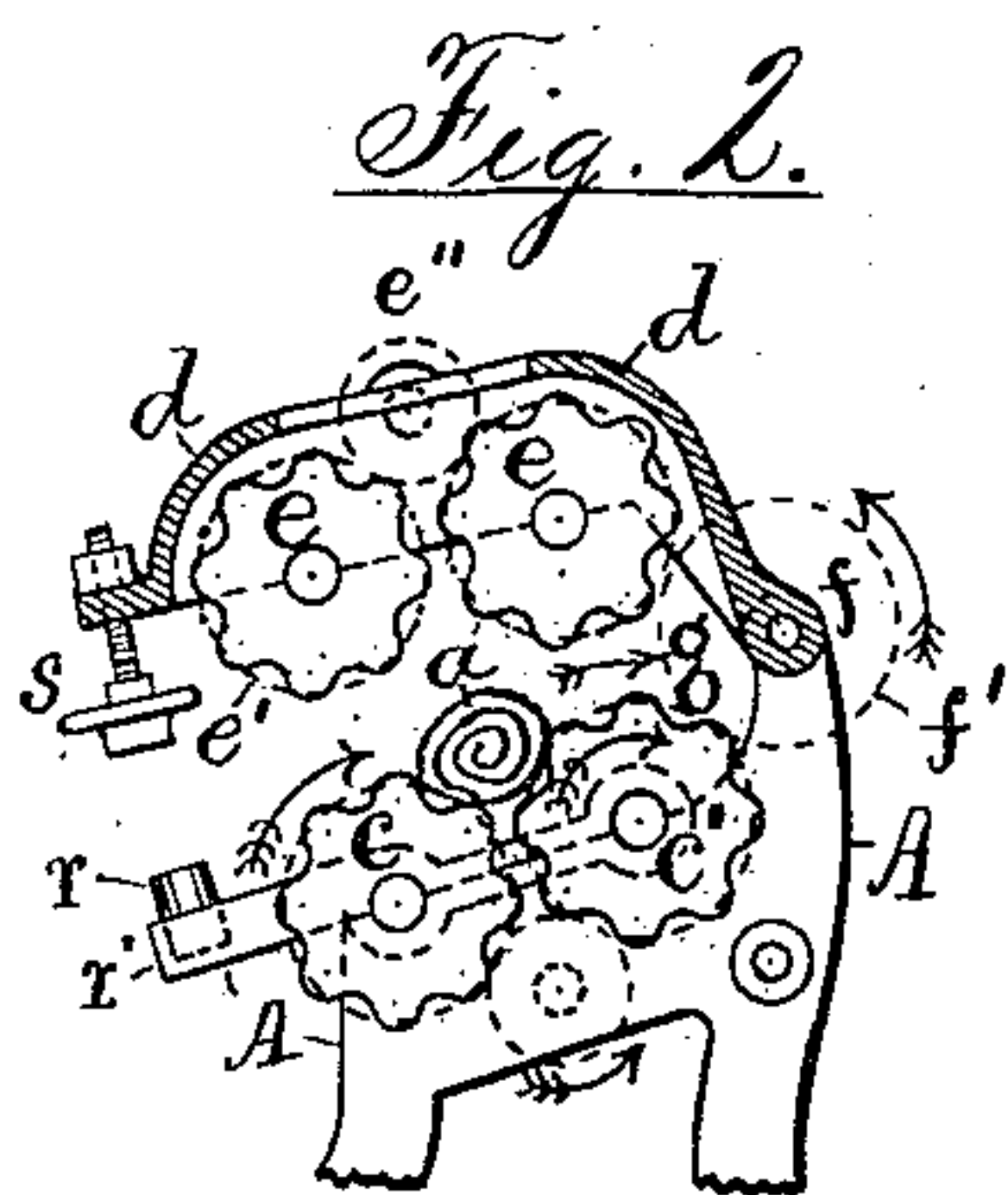


(No Model.)

G. YULE.  
Hat Sizing Machine.

No. 241,267.

Patented May 10, 1881.



*Attest:*

*C. C. Herrick.*

*Wm. Dietz*

*Inventor.*

*Geo. Yule, per*

*Thos. S. Crane, Atty.*

# UNITED STATES PATENT OFFICE.

GEORGE YULE, OF NEWARK, NEW JERSEY.

## HAT-SIZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 241,267, dated May 10, 1881.

Application filed February 4, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE YULE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Hat-Sizing Machines, of which the following is a description.

My invention relates to an improvement in hat-felting machines; and it consists, first, in a new arrangement of the rear roller of the lower set, in machines provided with two sets of rollers, forming a cavity between them for receiving the bundle of felts; secondly, in a special arrangement of the adjustable weight used to vary the pressure of the rolls upon the felts; and, thirdly, in a special arrangement for the stop employed to adjust the distance of the upper and lower rolls.

My invention is applicable to all machines having a pair of lower rolls, between which the felts are laid to be worked, and one or more upper rolls mounted in a movable frame and arranged to move to and from the lower rolls at pleasure, and is represented in the drawings annexed as applied to a three-roll, as well as a four-roll, machine.

Figure 1 is a side view of a three-roll machine, showing the improved arrangement of the rear lower roll, which consists in mounting it at a higher level than the front lower roll, to permit the rotation of the rollers in a direction contrary to that heretofore practiced. Fig. 2 is a transverse section of the rollers in a four-roller machine, showing the rear rollers similarly elevated; and Fig. 3 is a front view of the three-roll machine.

In all the views the upper rollers are shown elevated for the insertion of the bundle of felts, which is indicated at *a* in Fig. 2, and it will be seen that with the rollers turning inward, as indicated by the arrows in Fig. 2, the bundle of felts would be almost certain to roll out of the opening at the back of the rollers, unless the rear roller were elevated as shown.

The frame of the machine is indicated at *A*, the bearings for the two lower rolls, *b b'*; the lower rolls, *c c'*; the bearings for the upper rolls and the swing-frame in which the rolls are mounted, *d*; the upper rollers, *e e*; the hinge of the swing-frame *f*, and the opening at the rear

of the rollers when they are opened, at *g*. The connecting-gears are indicated merely by dotted circles at *e''*, *f'*, *e'*, and *e''*.

The swing-frame *d* is usually provided with a stop, *i*, which strikes upon a seat on the frame *A* when the rollers are closed and determines the size of the cavity between the various rollers.

In practice, the bundles of felts vary in size for different lots of goods, and it would be better to vary the cavity as to its capacity to hold and roll the bundles placed in it. To effect this object I provide an adjustable stop, *s*, either upon the frame *A*, as shown in Fig. 1, or upon the frame *d*, as seen in Fig. 2, the same consisting of a screw provided with a hand-wheel or other means for turning it readily, and preferably provided with an india-rubber plug, *r*, to make a gentle contact of the surfaces. If preferred, the india-rubber may be secured to the fixed stop opposed to the adjustable one, or to the seat *r'*. (Shown in Fig. 2.)

The frame *d*, being made of cast-iron exerts a uniform pressure, due to its weight, upon all the goods subjected to the pressure of the upper rolls, and as such goods vary considerably in weight, and as they require the application of more weight at the later stages of the felting process than at first, I have devised an adjustable weight, *W*, to be used in combination with the frame *d*, and arrange it to either increase or diminish the normal weight of the frame with its contained roll. The frame being usually elevated by the foot of the operator through the medium of a treadle, *t*, and vertical rod *h*, the weight may be applied either to the treadle or to the frame *d* with the same results. Both methods are shown in Fig. 1, the weight being applied to the treadle-lever *l* by a slide-bar, *m*, extending both sides of the fulcrum *n*, and thus enabling the weight to operate either with or against the weight of the frame *d*. The frame is also shown supplied with a slide-bar, *m'*, secured upon its top transversely to the roller *e*, and extending both sides of the hinge *f*, so as to afford the weight the adjustment just described. The weight is shown fitted to the slide *m'* by a dovetail joint, and a screw, *o*, is shown applied to the slide and fur-



nished with a crank, *p*, upon its front end, whereby the weight may be readily shifted, even when the machine is in operation.

The adjustable stop and weight afford the means of adapting my improved machine to a great range of work, while the elevation of the rear roller greatly increases the productivity of the machine, for the following reasons:

To prepare the felts for the rolls the machine is provided with a shelf, *B*, and hot-water tank *C*, heated by a steam-pipe, *D*, and the operator has hitherto been compelled, after forming the felts into a bundle or roll upon the shelf *B*, to turn the bundle end for end before placing it in the rolls to prevent the motion of the rolls from unwrapping the bundle. This was due to the fact that the bundle is always rolled up toward the operator, and that the rolls were always revolved outward to prevent the bundle from being carried through the opening *g* when thrown into the cavity in the rolls in the usual way. To prevent the bundle being unwrapped by such rolls after it was made up on the shelf in the usual way, the ends of the bundle required to be reversed, and, to prevent the rolls from throwing the bundle out of the cavity toward the operator, it has hitherto been necessary to drop the upper roll and frame, *d*, quickly upon the bundle, which required considerable skill and practice.

My improvement obviates these difficulties in the use of the machine by revolving the rolls inward, thereby avoiding the necessity of reversing the bundle and dropping the upper roller upon it, to keep it in the cavity, while

the elevation of the rear roller, *c'*, also prevents the bundle from being thrown out of the cavity in that direction. It is thus shown that my improvements increase the capacity of the machine both as to the quality and quantity of work done by it; but, as the use of rollers for such a purpose is already well known, I do not make any claim to them broadly, but—

I claim my improvements specifically as follows:

1. In a hat-felting machine constructed to roll a bundle of hats between an upper and lower set of rollers, as herein described, the arrangement for the rear roller of the lower set, whereby the same is elevated above the front roller, substantially as and for the purpose set forth.

2. The adjustable stop *s*, consisting in a screw operating in combination with the rubber plug *r*, substantially as and for the purpose set forth.

3. The combination, with the swing-frame *d*, of the weight *W*, mounted upon a slide, *m'*, extending both sides of the hinge *f*, and provided with a screw, *o*, to set and retain it in any desired position, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of February, 1881.

GEORGE YULE.

Witnesses:

ISADOR HANNOCH,  
THOS. S. CRANE.