

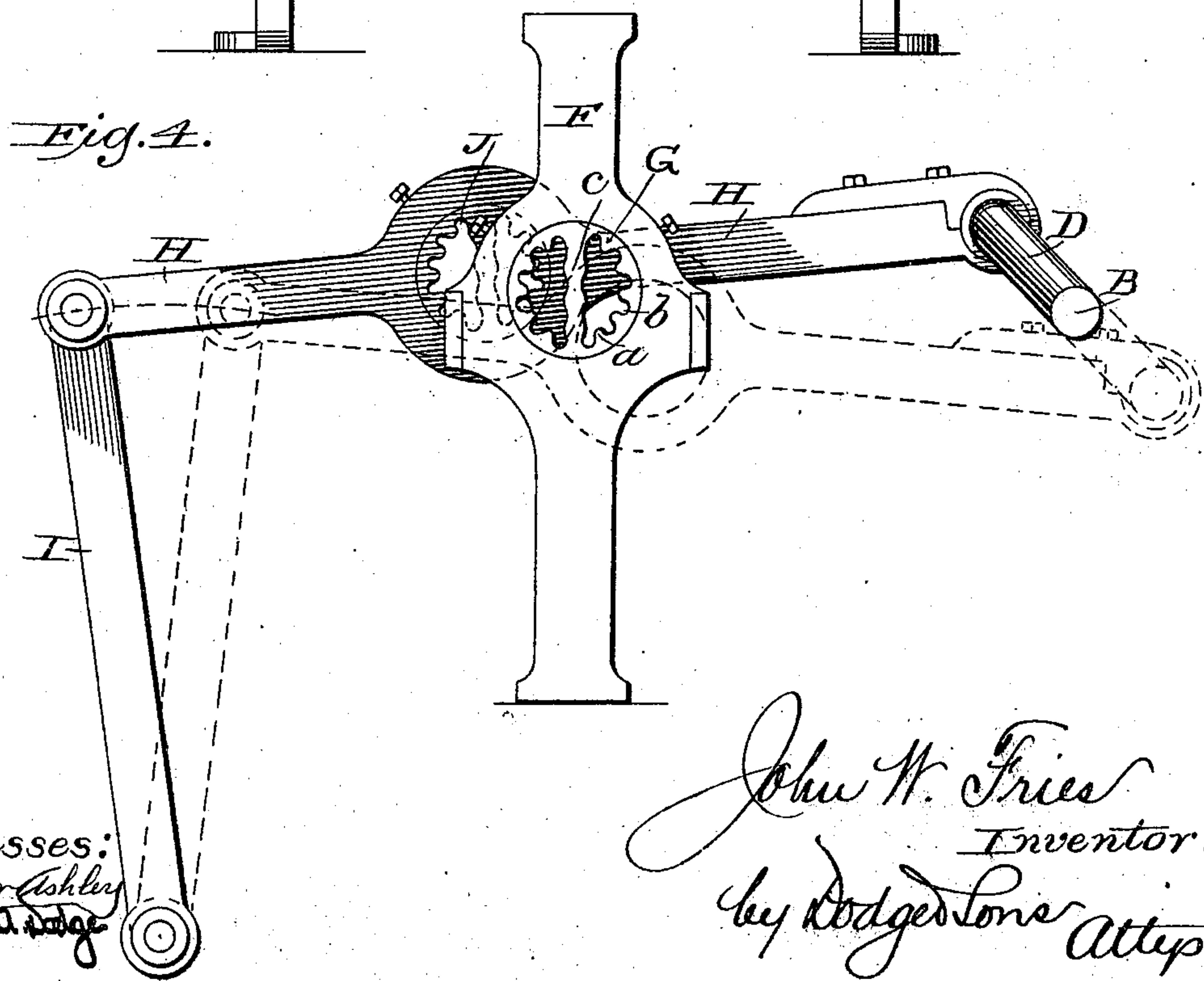
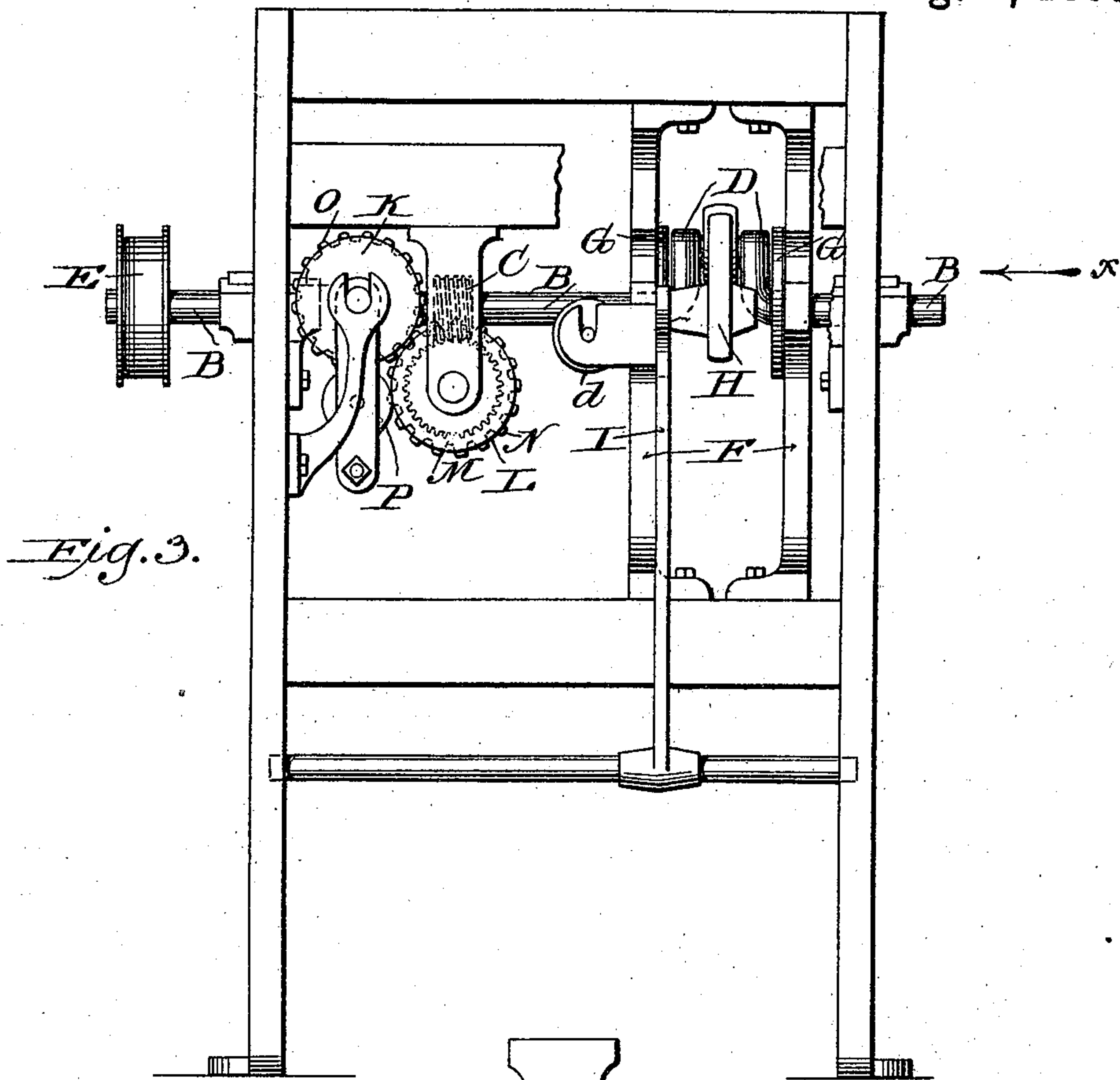
(No Model.)

2 Sheets—Sheet 2.

J. W. FRIES.
MACHINE FOR SOFTENING CLOTH.

No. 502,903.

Patented Aug. 8, 1893.



Witnesses:
Arthur Ashby
Hiram A. Dodge

John W. Fries
Inventor:
by Dodge & Sons Attys.

UNITED STATES PATENT OFFICE.

JOHN W. FRIES, OF SALEM, NORTH CAROLINA.

MACHINE FOR SOFTENING CLOTH.

SPECIFICATION forming part of Letters Patent No. 502,903, dated August 8, 1893.

Application filed March 18, 1893. Serial No. 466,639. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. FRIES, a citizen of the United States, residing at Salem, in the county of Forsyth and State of North Carolina, have invented certain new and useful Improvements in Machines for Softening Cloth, of which the following is a specification.

My invention relates to machines for softening cloth, and consists in various features and details hereinafter set forth and claimed.

In the drawings,—Figure 1 is a top plan view of my improved machine; Fig. 2, a front end elevation; Fig. 3, a side view; and Fig. 4, a detail view.

A indicates a main supporting frame of any suitable construction, and B a shaft extending from front to rear thereof and journaled in suitable bearings. This shaft is provided with a worm C, a crank or cranked portion D, and a band wheel E as shown in Figs. 1 and 3.

F F indicate upright posts secured rigidly upon the frame, as shown in Figs. 2 and 3, and carrying each a die G of the form illustrated in Fig. 4,—the said posts being separated from and arranged parallel to each other. Working between the upright posts F F, is a bar H which is connected at one end with the crank D, and at the opposite end with the upper end of a rocking lever I, as clearly shown in all the figures, the said bar H carrying a die J which in the present instance is shown as of the same form as the dies G G in the upright posts.

Upon reference to Fig. 4 it will be noticed that these dies G and J comprise a ring *a* having internal rounded teeth *b*, and a connecting bar *c* having on both edges similar rounded teeth; the said bar *c* dividing the dies into two separate and distinct parts or openings through either of which the cloth may be fed. It will also be noticed upon reference to Fig. 4 that, upon the rotation of the shaft B, the die J in the bar H will be reciprocated back and forth and up and down between the dies G in the posts F. Beyond the inner post F is a horizontal guide roller *d* upon which the cloth rests after passing through the dies; while beyond the roller *d* is a pair of horizontally-disposed feed rollers K, L, arranged

in different horizontal and vertical planes as shown in Fig. 3. Upon the shaft of roller L is a worm wheel M which receives motion from worm C, and also a gear wheel N which meshes with a similar gear O on the shaft of roller K, as shown in Figs. 1, 2, and 3. Hung from the shaft of roller K, or otherwise supported, is a smaller roller P which is used for the purpose of preventing the material from winding entirely around the rollers K, L, but which may be omitted if desired.

The operation of the machine is as follows: The cloth is fed in the direction of the arrow *x*, Fig. 3, through the first die G, then through the corresponding opening in the reciprocating die J, and finally through the second fixed die G. Motion is now imparted to the shaft B, and the die J which is carried in the vibrating bar H, is reciprocated back and forth and up and down between the fixed dies G, and causes the cloth to rub or pull over the rounded teeth *b*, or to be kneaded, as it were, by such teeth. This effectually "breaks down" the goods and softens them to an extent and in a manner heretofore unknown, and improves both the "feel" and "character" of the goods. After passing through the dies the cloth passes over the guide roller *d*, thence downward to the under side of the roller L, between said roller and the roller K, and finally over the top of roller K and out of the machine.

Two separate pieces of cloth may be fed through the machine at the same time,—one piece through each die opening.

The form or shape of the dies may be variously modified to suit different widths, weights and thicknesses of cloth.

Having thus described my invention, what I claim is—

1. In a machine for softening cloth, the combination with two dies each having an opening with rounded or blunt inwardly-projecting teeth; of means for reciprocating one of said dies relatively to the other.

2. In a machine for softening cloth, the combination with two dies each comprising a toothed ring *a* and a toothed bar *c*; of means for reciprocating one of said dies relatively to the other.

3. In combination with the posts F F hav-

ing the dies G, and the reciprocating bar H having die J; the guide roller *d*; the feed rollers K and L geared together; a shaft B; a crank D thereon for imparting motion to
5 bar H; and a worm C also secured to the shaft B and engaging a worm wheel M on the shaft of roller L.

4. In combination with the fixed and movable dies, and the guide roller; the geared

feed rollers K and L; and the roller P arranged in proximity to the feed rollers.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOHN W. FRIES.

Witnesses:

JAMES E. REICH,
A. F. PFOHL.