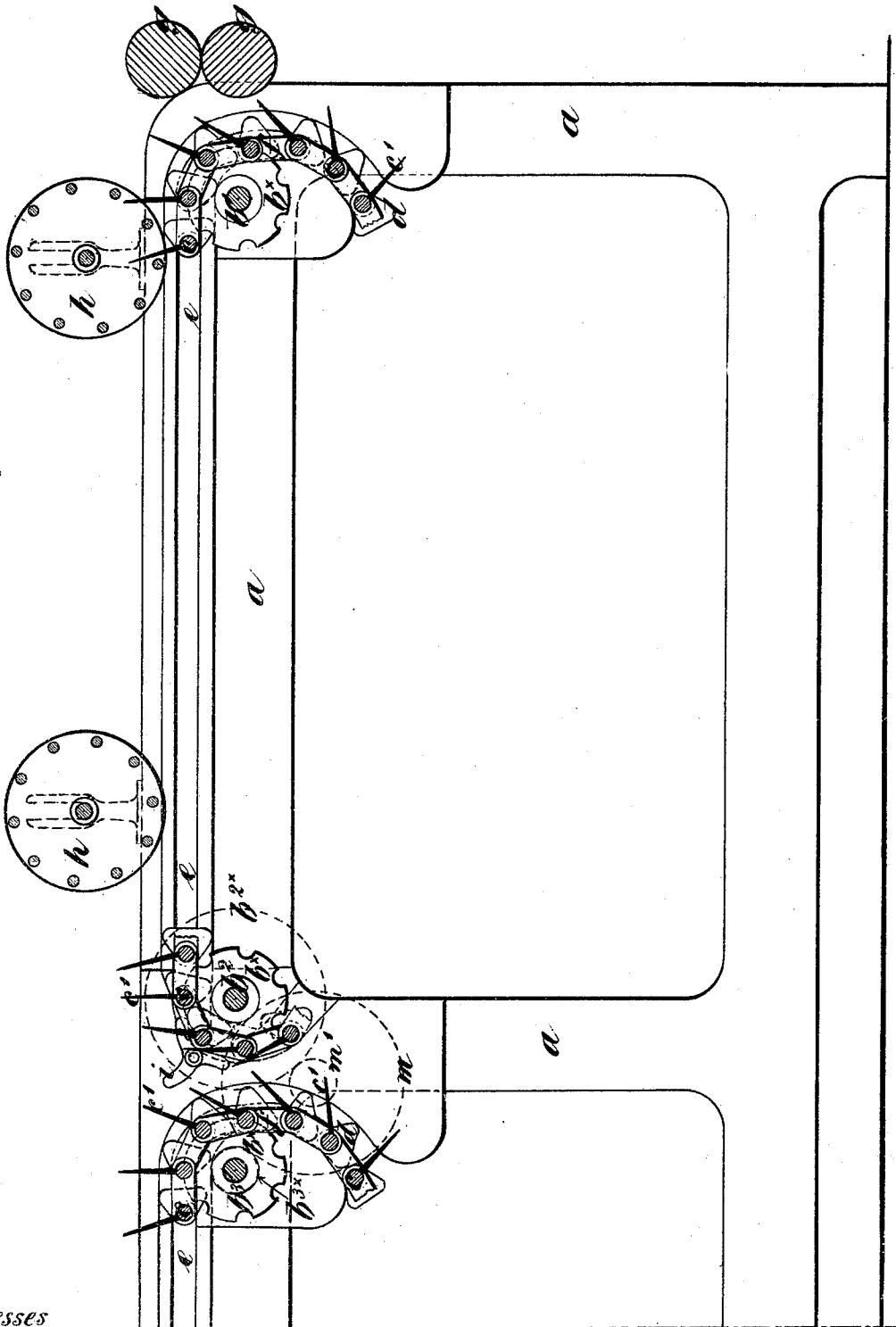


F. D. FROST.
HEMP HACKLING-MACHINE.

No. 170,947.

Patented Dec. 14, 1875.

Right hand end of Fig. 1.



Witnesses

J. H. Young
Batis De Long

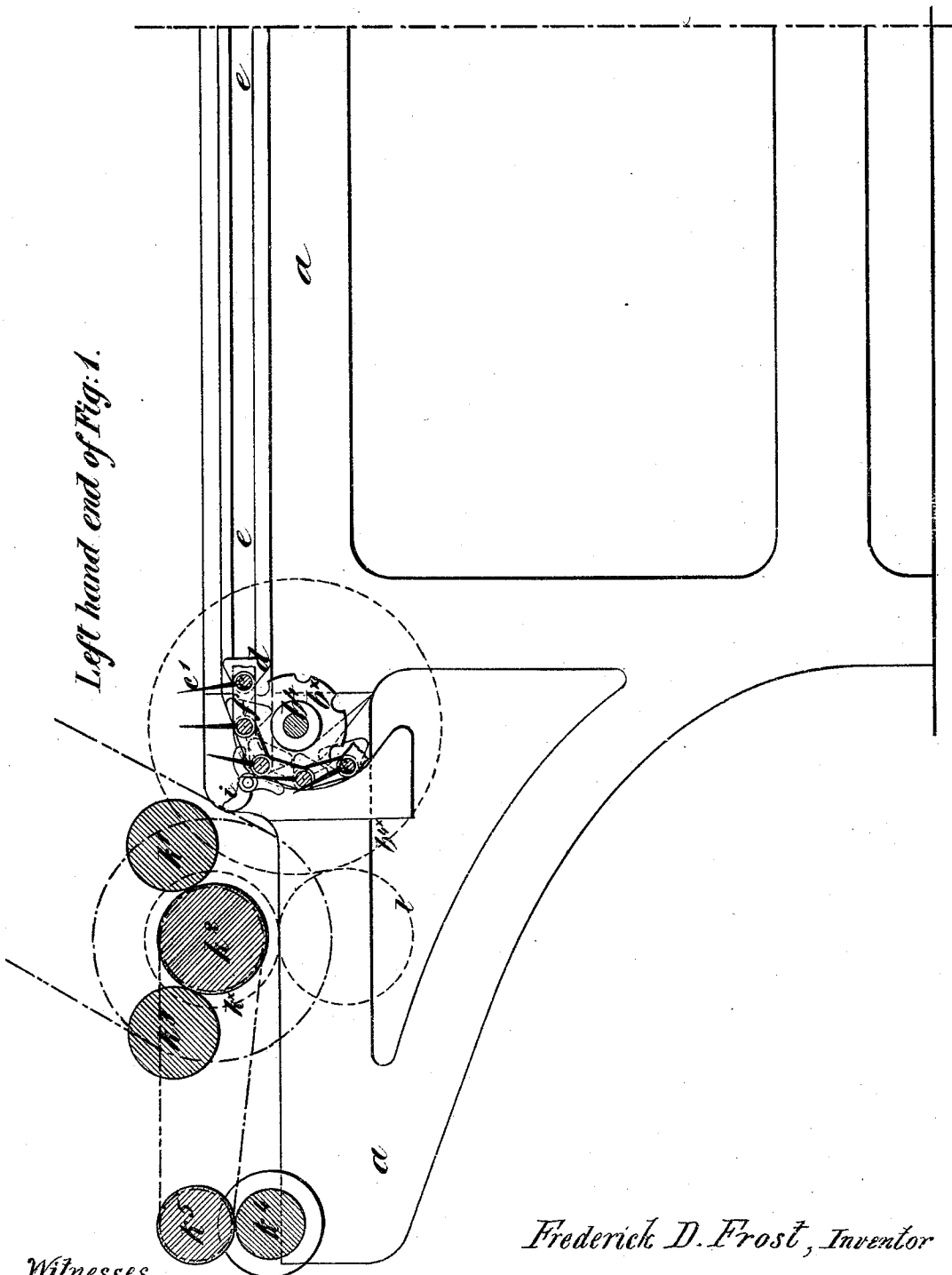
Frederick D. Frost, Inventor

By his Attorney W. D. Baldwin

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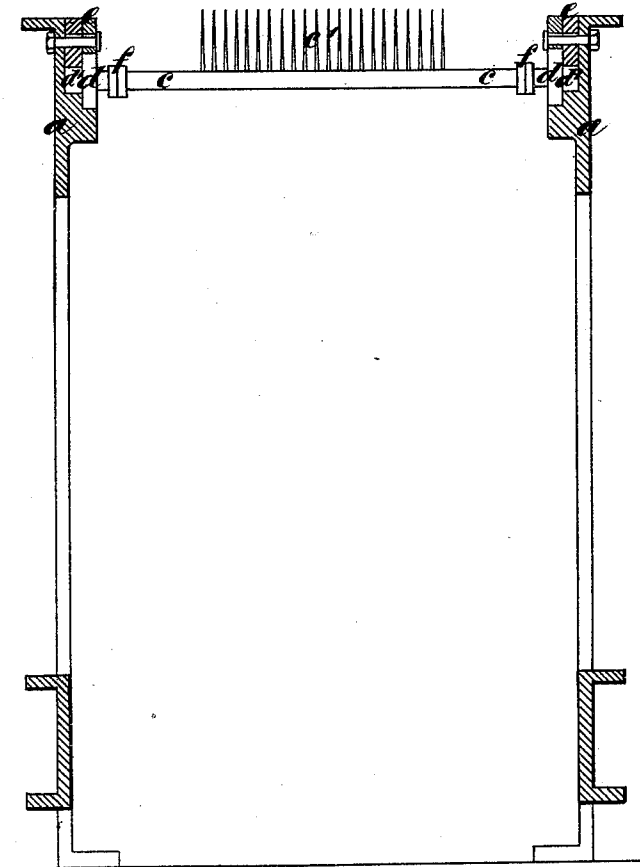
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Fig. 2.



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Fig. 3.

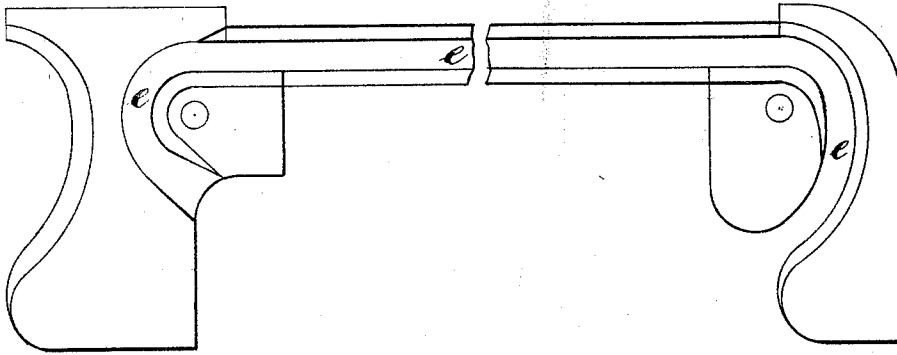


Fig. 4.

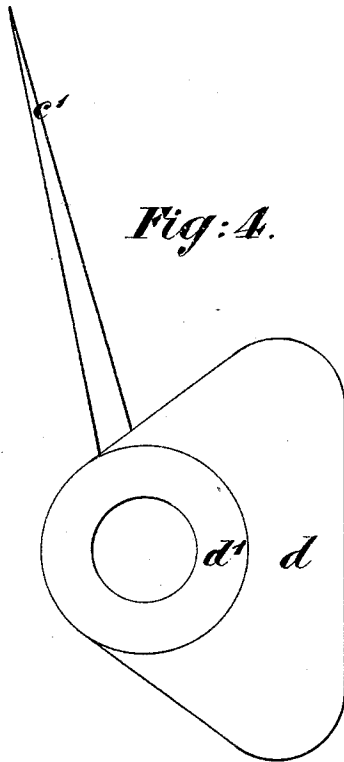
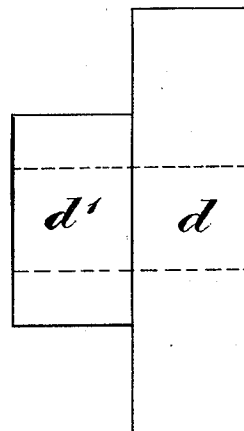


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK D. FROST, OF LONDON, ENGLAND.

IMPROVEMENT IN HEMP-HACKLING MACHINES.

Specification forming part of Letters Patent No. **170,947**, dated December 14, 1875; application filed March 4, 1875.

To all whom it may concern:

Be it known that I, FREDERICK DUNCH FROST, of 11 London street, in the city of London, England, a subject of the Queen of Great Britain, have invented or discovered new and useful Improvements in Machinery for Hackling or Preparing Hemp and other Fibers; and I, the said FREDERICK DUNCH FROST, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

This invention has for its object improvements in machinery for hackling or preparing hemp and other fibers, and relates especially to machines in which the teeth or points for dressing the fibre are mounted on bars or fallers, and the bars or fallers are connected by links into an endless sheet, which passes around rollers or axes, and is driven by them. The fiber passes from feed-rollers on to one endless sheet of teeth, which carries it to another similar sheet, driven at a much higher velocity, and this latter, having taken the fiber from the first sheet of fallers, carries it forward and delivers it to drawing-off rollers.

Now, in order to govern or control the fallers of such endless sheets effectually, and with but slight friction and wear, and to admit of their being driven at a high speed, and with the minimum expenditure of power, I construct the fallers and the parts which govern or control them in the following manner: The necks of the fallers project beyond the links which connect them together, and upon each a triangular tappet is firmly fixed. The neck of the faller is inserted and fixed into a boss formed near one angle of the tappet, and the other two angles, which should be rounded, so as to work smoothly and evenly, come into contact with guides, which govern the inclination of the teeth. The boss is on the outer side of the tappet; it is cylindrical, and also runs in guides, which support the sheet of fallers, and prevent it sagging on its upper or working side. The guides are upon the two side frames of the machine, and the upper guide, or wall of the groove forming the guide, is adjustable, and is set up when required to compensate for wear. As the fallers

travel from roller to roller on the upper side the teeth are held so as to incline slightly forward, and the guide-grooves being straight, they maintain this position until they are going to pass down around the farther roller, and so to leave the fiber. Here the guides are so formed as to place the teeth vertically, ready to fall out of the fiber. As the fallers descend, passing around the roller, the fixed guides allow to them a certain amount of freedom, and here, if desired, the control of the inclination of the teeth may be taken by two rotating guide wheels or disks, which will maintain the teeth in a nearly vertical position, until they have fallen out of the fiber.

The two guide wheels or disks are similar, and are placed one on either side of the machine outside the sheet of fallers. The disks or wheels are able to rotate freely on axes, and they are formed with recesses and projections, which interlock with the tappets, and control them in the manner described.

As the fallers return beneath the rollers they are not governed by guides, but the sheet of fallers is allowed to sag freely, and the weight of teeth or points causes them to incline downward. Before the fallers again rise and strike into the fiber the guides again control them, and place the teeth in position. When the fallers reach the upper side of the roller their teeth, as before mentioned, have an inclination forward. This causes them to strike more effectually into the fiber, which otherwise would have a tendency to ride on the top of the teeth.

In order that my said invention may be most fully understood and readily carried into effect, I will proceed to describe the drawings hereunto annexed.

Figure 1 is a longitudinal section, showing parts of the machine. Fig. 2 is a transverse section. Figs. 3, 4, and 5 show some of the parts separately.

a a is the frame of the machine, carrying the bearings of the axes or rollers *b¹*, *b²*, *b³*, and *b⁴*, which the two sheets of fallers encircle. *b^x* *b^x* are the drivers, which engage with and drive the sheets of fallers. *c c* are the fallers, and *c'* the teeth upon them. *d d* are the tappets, with rounded corners or angles; and *d' d'*, their hollow bosses. *e e* are the guides fixed upon

the frame *a*, the upper parts or walls of which are adjustable, in this instance, by means of clamp-bolts and nuts, as shown, to compensate for wear both of the bosses and tappets, or by them. The bosses, it will be seen, move in and are controlled by the central deepened portions of the guides. *ff* represent the links, which connect the fallers into an endless sheet. *g g* are the rollers, between which the fiber passes on to the teeth of the first chain. *h h* are skeleton-rollers, which rest by their own weight upon the fiber, and press it into the teeth. *i i* are the rotating guide wheels or disks, which may be employed to control the fallers while the teeth descend out of the fibre. *k¹, k², k³, k⁴, and k⁵* are the drawing-off rollers. The machine is driven by a belt passing around a pulley on the axis of the roller *k²*. A spur-wheel, *k^x*, on this axis drives an intermediate wheel, *l*, gearing with a wheel, *b^{4x}*, on the axis of the roller *b⁴*, around which the second or fast-running sheet of fallers passes. The roller *b³*, encircled by the same sheet of fallers, has on its axis a pinion, *b^{3x}*, driving the intermediate wheel *m*, on the same axis with which is the pinion *m'*, and this drives the spur-wheel *b^{2x}* on the axis of the roller *b²*, which is encircled by the slow-running chain.

What I claim is—

1. The combination of the endless sheet of fallers, their triangular tappets, the hollow bosses on the tappets, in which the fallers are fixed, and the frame-guides, into which both the bosses and tappets project, these members being constructed and operating substantially as set forth.

2. The combination of the two endless sheets of fallers, moving at different speeds, as set forth, and the rotating guides to control the inclination of the teeth of the first sheet at the moment of delivering the fiber to the second sheet, substantially as set forth.

3. The combination, with the frame, of the adjustable guides for the tappets and their bosses, as set forth.

4. The triangular tappet *d*, constructed, as set forth, with rounded angles and a boss, *d'*, for the purpose specified.

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