Read & Cotter.

Fulling Machine

No. 7673 Patented Sep. 24, 1850.

Fig. 1

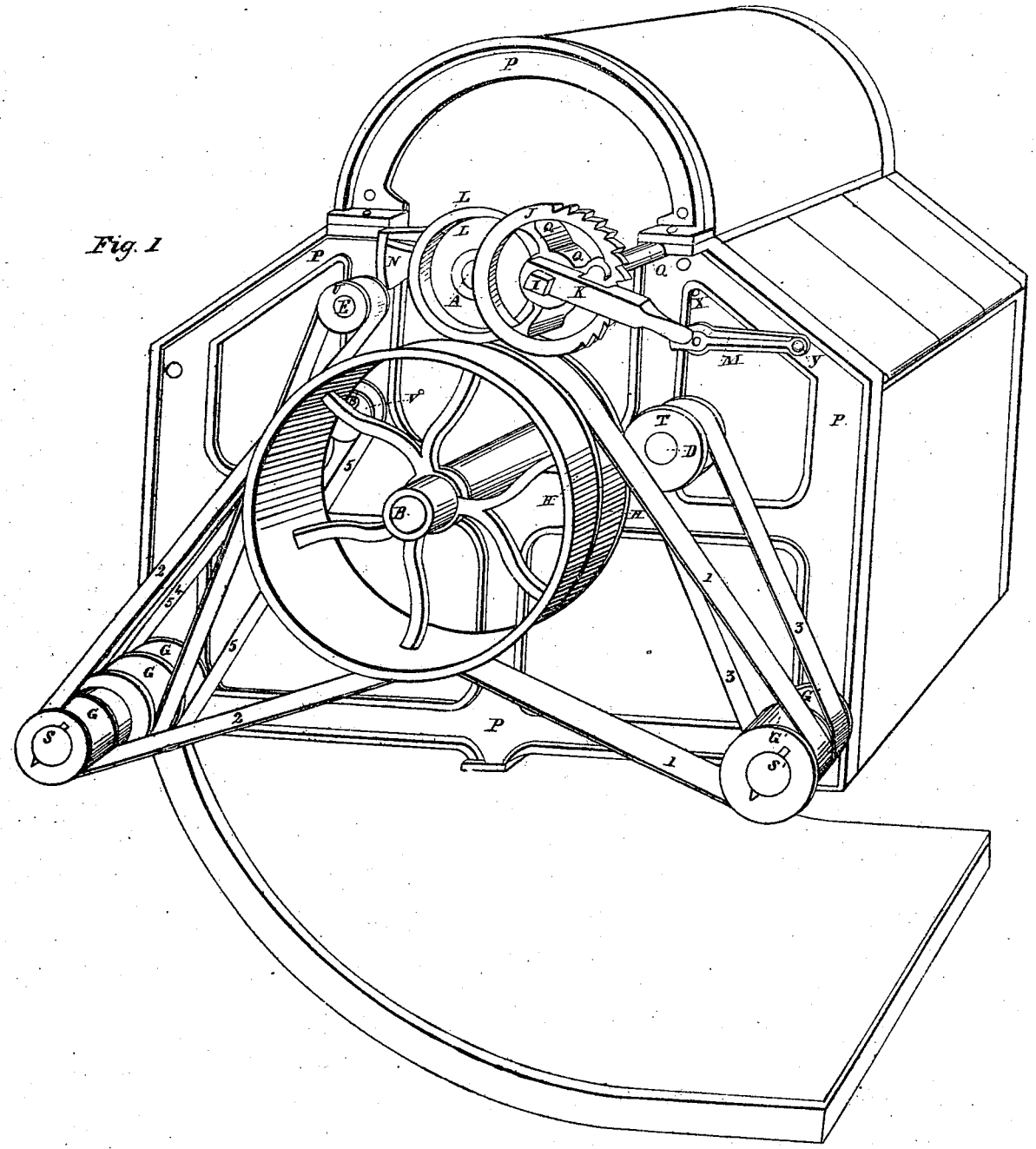

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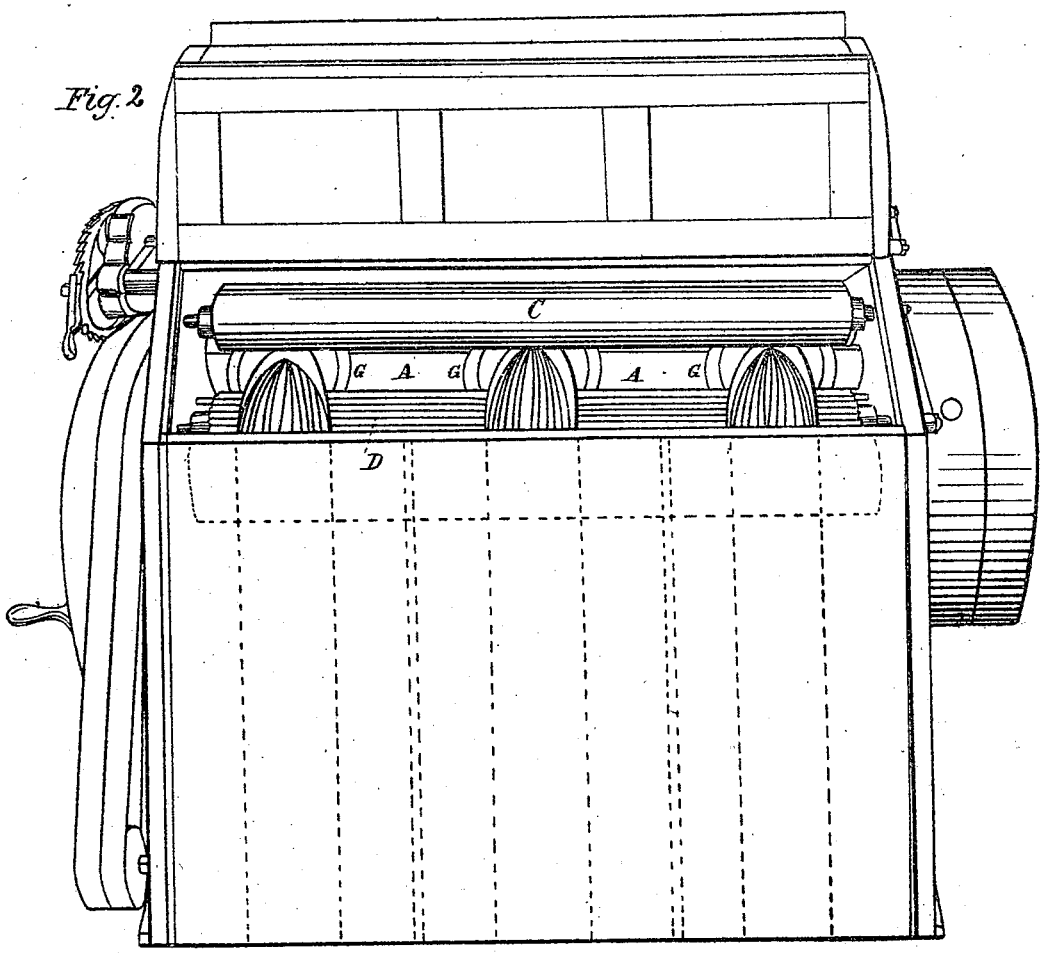
Fig. 2



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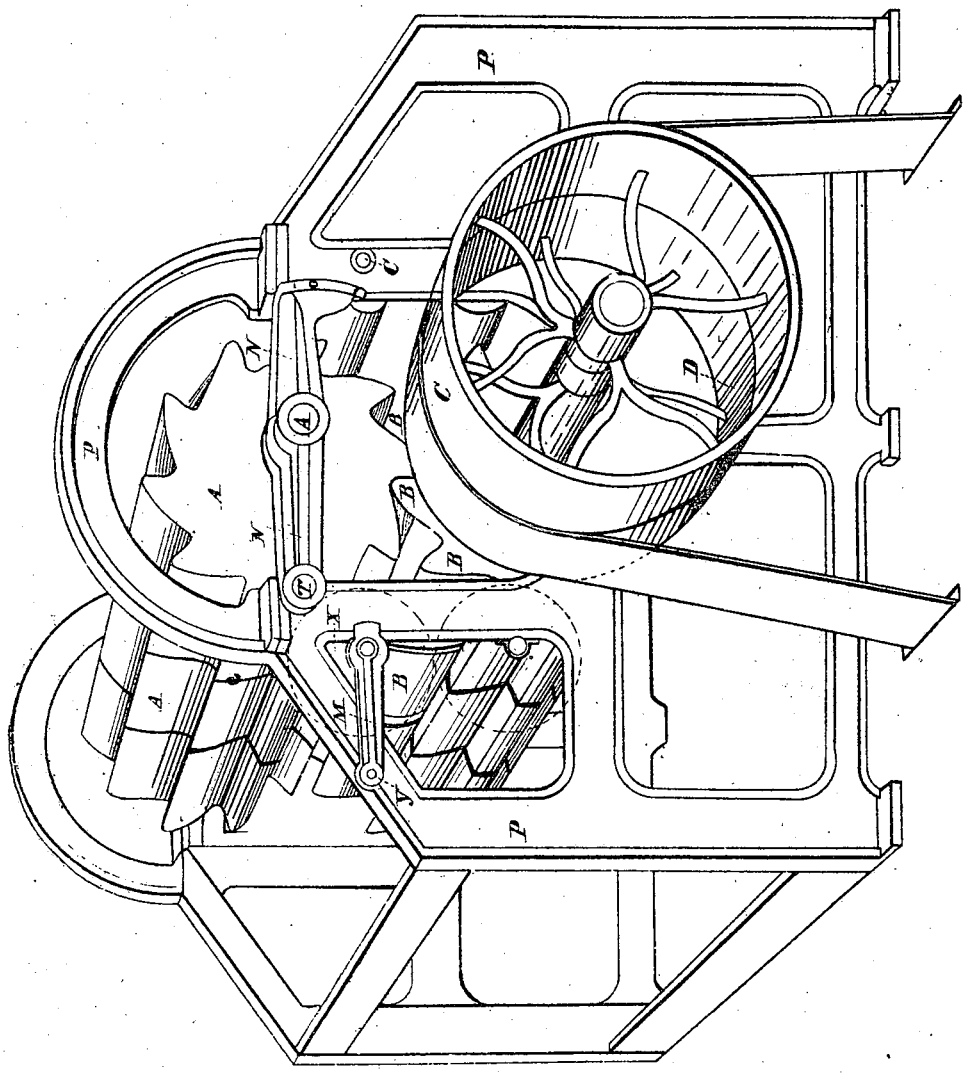

Fig. 3

Sheet 4-4 Sheets

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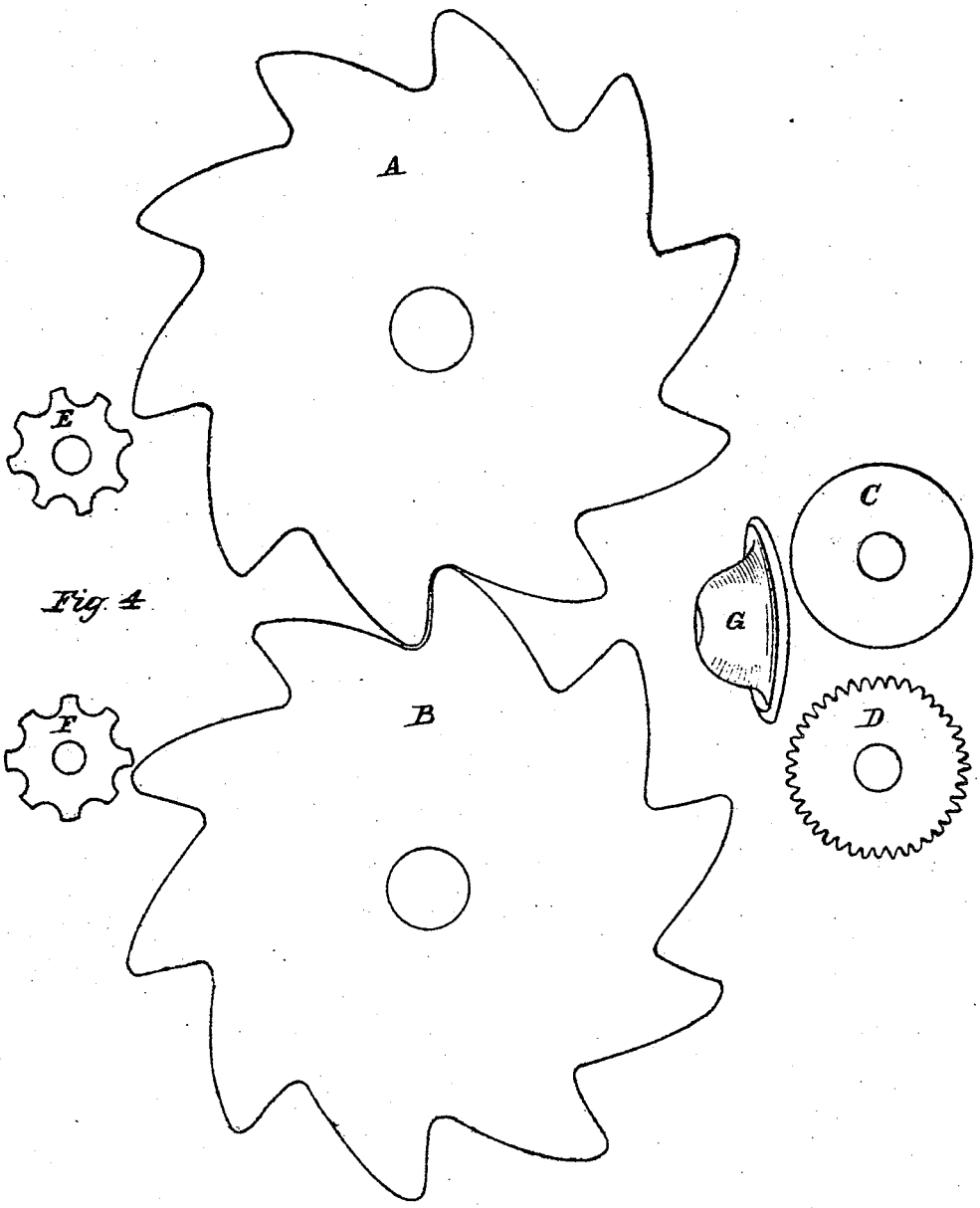

Fig. 4

UNITED STATES PATENT OFFICE.

CHAS. A. READ AND THOS. COTTER, OF NEW HARTFORD, NEW YORK.

MACHINERY FOR FULLING CLOTH.

Specification of Letters Patent No. 7,673, dated September 24, 1850.

To all whom it may concern:

Be it known that we, CHARLES A. READ and THOMAS COTTER, of Washington Mills, town of New Hartford, county of Oneida, and State of New York, have invented a new and useful Machine for Fulling Fabrics; and do hereby declare that the following is a full and exact description thereof and of its construction and operation, reference being had to the annexed drawings, making a part of this specification.

Drawing Figure 1, represents a side view of the fulling mill box or frame, containing the toothed fulling cylinders, the feeding and cleaning rollers and the guides. It also represents, in outline the chamber below the cylinders for the fabric to be fulled—this is marked "the receiver." This figure also represents the position and adjustment of the intermediate pulleys on the outside of the mill which regulate the speed of the feeding and cleaning rollers within, and also represents the friction and ratchet wheel which regulates the resistance of one of the fulling cylinders, as will more fully appear hereinafter.

Drawing Fig. 2, represents a front view of the fulling mill—a portion of the coverings of the frame is removed to show the feeding rollers C and D. These rollers feed the cloth through trumpet or bell shaped guides G G G between the fulling cylinders. When the mill is in operation the feeding rollers C and D lie close together. In this figure, roller C is lifted up so as to show the the bell-shaped guides behind them, through which the fabric is passed to the fulling cylinders. The guides are so formed as to deliver the fabric on to the fulling cylinders in as thick a shape as possible, so that the fulling cylinders will have more thickness of fabric to beat upon. Of the two feeding rollers, one the upper is smooth; the under one is fluted and drives the upper roller.

Drawing Fig. 3, represents a front and side view of the fulling mill with its covering off, with the feeding and cleaning rollers and trumpet shaped guides also removed, showing nothing inside but the two fulling cylinders A and B. These two cylinders are those that full the fabric. The upper cylinder A is called the resisting cylinder; the lower cylinder B is called the driving and striking cylinder. These may be made of any suitable material and sizes; both are toothed, and the teeth are so constructed that the fabric is fulled by the blows given by the teeth of the driving cylinder B, upon the fabric against the teeth of the resisting cylinder A and also by pressure between the teeth, as will more plainly appear in drawing Fig. 4, to which we shall next refer. The side view of the mills represented in this Fig. 3 is that opposite the side represented in Fig. 1 and shows the driving pulleys C and D.

Drawing Fig. 4, represents a transverse section of the fulling cylinders A and B, and also a transverse section of the feeding rollers C and D, and also a transverse section of the cleaning rollers E and F and a side view of one of the bell-shaped guides G which deliver the fabric on to the fulling cylinders A and B in rolls. The objects of the feeding rollers C and D have already been mentioned. The cleaning rollers E and F receive the fabric after it has passed from between the fulling cylinders and prevent it from clogging and winding up over resisting cylinder A or down around cylinder B. These two rollers are therefore termed the cleaning rollers.

The nature of our invention consists in fulling fabrics by means of toothed cylinders operated by power machinery.

The cylinders being so adjusted that one of them shall be the driving and striking cylinder and the other the resisting cylinder. The teeth of the striking or driving cylinder making a heavy blow upon the teeth of the resisting cylinder, and necessarily upon any fabric which may pass between them—the power of resistance of the resisting cylinder being regulated by a friction pulley, lever and ratchet wheel attached to the end of the resisting cylinder. In front of these cylinders are placed two feeding rollers, and between the feeding rollers and the cylinders are placed one or more guides. The feeding rollers are so adjusted that when one end of the fabric is placed between them they draw in the residue of the fabric and feed it through the guides between the fulling cylinders. And this by connecting the ends of the fabric, may be done any number of desired times without any further labor or attention. The speed of the feeding rollers is made greater than that of the fulling cylinders, so that the fabric is fed between the cylinders so rapidly as to prevent all strain upon it. Behind the fulling cylinders are placed two other rollers called the cleaning

rollers, whose office it is to prevent the fabric from clogging or adhering to the cylinders after it has passed from between them.

By means of this invention a large amount of power, stock, labor and attention is saved, and the fabric is fulled more evenly and twice as rapidly as by any known process.

To enable others skilled in the art, to make and use our invention, we will now proceed to describe its construction and operation.

The fulling cylinders A and B shown in Figs. 3 and 4, and also the feeding rollers C and D shown in Figs. 2 and 4 and also the cleaning rollers shown in Fig. 4, may be made of wood, iron, brass or any other known suitable material, and of any suitable length and diameter, according to the amount of power and of fabric desired to be fulled at any one given time in one mill. The feeding and cleaning rollers being made of smaller diameter than the fulling cylinders, for the sake of economy and speed.

One of the feeding rollers being fluted and operating as the driving roller for the upper which is round and smooth. The teeth of the fulling cylinders are made large and strong and are so constructed that the under or inner surface of each tooth is flat, so that the flat surface of the teeth of the driving and striking cylinder B will strike upon the flat surface of the teeth of the resisting cylinder A, so that the fabric between these surfaces is fulled by heavy blows and when between other portions of the teeth it is pressed and jammed firmly together, thus being fulled by a combination of blows and pressure.

The guides which receive the fabric from the feeding rollers, and conduct it between the fulling cylinders, have wide openings next the feeding rollers, and diminish in size as they approach the fulling cylinders, being shaped much like the mouth of a trumpet. The guide is contracted toward the fulling cylinders so as to deliver the fabric between them in rolls. The number of guides depends upon the number of pieces of fabric to be fulled at the same time in the mill and may be made of wood or metal or any other suitable material and size.

The frame and other parts of the fulling mill may also be made of any known suitable material and size according to the strength and quantity of fabric desired to be fulled at any one time.

In drawing Fig. 1 that part of the frame indicated by the letter P is designed to represent iron, and the residue wood. The frame P is constructed so as to form the boxes for the journals of the shafts of cylinders A and B and also of the feeding rollers C and D and of the cleaning rollers E and F and also of the shafts of the loose pulleys G G G and 'G 'G. The frame P also supports the frame Q Q of the ratchet wheel J and the stationary end of the arm M. The shafts of each of the fulling cylinders A and B and also of the feeding and cleaning rollers C and D, E and F are extended through this frame on the side of the fulling mill represented in Fig. 1 and upon each of the extended shafts is placed one or more pulleys. The extended shaft of the driving cylinder B is represented in drawing Fig. 1 by letter B and upon that shaft is placed and firmly fastened the connected pulley H H. This is but one pulley with a dividing collar running midway between the outer edges of the outer circumference of the pulley, for the purpose of using two belts without interference. From the connected pulley H H passes a belt marked figure 1 or to one of the connected pulleys marked 'G 'G. These pulleys are constructed like pulley H H, being in fact but one pulley with a dividing collar. This connected pulley 'G 'G runs loose on the permanent shaft 'S. This shaft is fastened firmly to the frame P of the fulling mill. Another belt marked figure 2 passes also from the connected pulley H H on to the connected pulley G G G which is constructed in the same manner with pulley 'G 'G, with two dividing collars instead of one. It also runs loose on the shaft S which shaft S is permanent and fastened firmly to the frame P.

The connected pulleys G G G and 'G 'G are merely intermediate pulleys between the connected pulley H H and the pulleys T U and V and are designed for the purpose of giving sufficient length and bearing of belt between the pulleys H H and the pulleys T U and V in as convenient and small a space as possible; and made of any suitable size and placed at any suitable distance from pulley H H. Now motion having been given by belt marked figure 1 from the pulleys H H to the connected pulley 'G 'G motion is thereby given by means of belt marked figure 3 to the pulley marked letter T. This pulley is fastened to the shaft D which is the extended shaft of feeding roller D, which roller D is seen in drawing Nos. 2 and 4; pulley T may be made of any size suitable to give the requisite speed to feeding roller D; it being necessary that the speed of this roller should be greater than that of the cylinders B and A. Motion having been conveyed from the pulleys H H by means of belt marked figure 2 2 to the connected pulley G G G, motion is thereby, by means of belt marked figure 4 4 conveyed to pulley U and by means of belt marked figure 5 5 to pulley V. Now pulley U is fastened to the shaft E which is the extended shaft of the upper cleaning roller E, of which a transverse section is shown in drawing No. 4 marked E; and pulley V is fastened to shaft F which is the extended shaft of the

lower cleaning roller F of which a transverse section is shown in drawing No. 4, marked letter F. The pulleys U and V are made of any suitable size to give the requisite speed to the cleaning rollers E and F. Thus by means of this combination and adjustment of pulleys, the entire motion of all the feeding and cleaning rollers is given by the driving cylinder B and at the same time an entirely different speed. As yet however it has not appeared how the upper feeding roller C gets its motion; this is obtained from roller D which is fluted and is in fact its driving roller.

We will now describe the operation and construction of the feeding roller C. This roller is not fluted and is represented in the drawings Nos. 2 and 4 by letter C. It is so arranged as to be capable of being let down upon roller D which is placed immediately below it, or of being lifted up from it. To effect this, its journal represented by letter C in drawing No. 1 is placed in the movable arm marked letter M. One end of this arm can be moved up or down in the slot in the frame marked X, while the other end of the arm is fastened to the frame by a stud marked Y; a similar arrangement is used at the opposite end of this roller as is represented in the drawing Fig. 3 by letters M Y X. It remains to describe the adjustment and construction of the resisting cylinder A with the friction wheel L and lever, ratchet wheel and axle and frame I J K and Q. The resisting toothed falling cylinder A is adjusted to lift up from or let down upon the driving fulling cylinder B by an arrangement similar to that which we have just described respecting roller C. This is best seen in drawing Fig. 3 which represents a view of the sides of the mill opposite that represented in drawing Fig. 1 and we will now refer to drawing Fig. 3.

The bearing or journal A′ of the cylinder A is supported by the movable arm N, one end of which is stationary and held to the frame of the mill by the stud T; the other end of the arm is movable and when down rests upon a shoulder made on the frame P of the mill; which shoulder is represented in Fig. 3 by the letter O. The movable end of the arm is capable of being moved up any desired distance, so that after each blow struck upon the teeth of the resisting cylinder A by the teeth of the driving cylinder B, the resisting cylinder A moves or yields sufficiently to allow the fabric to pass on. To regulate the amount of the resistance of this cylinder A to the blows of the driving cylinder B a friction wheel is attached to the extended shaft of the cylinder A on that side of the mill opposite the side represented in drawing Fig. 3; and as this side and arrangement is only represented in drawing Fig. 1 we will now refer to that drawing. On the extended shaft marked A of the cylinder A is fastened the pulley L. Around this pulley is wound a belt the ends of which are firmly fastened to the axle marked I of the wheel marked J. This wheel is notched on one side so as to form a ratchet. This wheel and its axle are supported by a frame marked Q which is attached to the movable arm marked N. On the axle I is inserted the lever marked K. This lever is provided with a pawl or hand which passes in between the teeth of wheel J holding the lever firmly in any position in which it may be placed. Now by pressing down the lever K it turns the axle I which winds around it the ends of the belt which passes around the rim of the pulley L and causes the belt to draw tightly upon the pulley rendering it, if desired, immovable; and this pulley being fastened firmly to the shaft of the resisting cylinder A it increases its powers of resistance at the will of the operator. If the resistance is too great, it is lessened immediately by lifting the lever and thus loosening the friction belt and permitting the pulley L and cylinder A to run freely.

Motion is given to the driving and striking cylinder B by power and belt applied to the pulley D which is firmly attached to the shaft of that cylinder and through that cylinder motion is conveyed to all the other running part of the machine, as is shown in drawing Fig. 3.

We do not claim as our invention the particular shape of the frame of the fulling mill; but

What we do claim as our invention and desire to have secured to the said CHARLES A. READ by Letters Patent, is—

The above described mode of fulling fabrics by means of toothed cylinders by power machinery, the fabric being fed between the fulling toothed cylinders by means of feeding rollers through guides with sufficient rapidity to prevent all strain upon the fabric, and at the same time to supply the fulling cylinders which receive the fabric, full it and then pass it out between two cleaning rollers, which receive it from the fulling cylinders, prepared for other processes, the movements of the several parts of the machine being produced by a combination and adjustment of mechanism, similar to that herein described and represented, or any other, which may be substantially the same, and by which analogous results may be produced.

CHARLES A. READ.
THOMAS COTTER.

Witnesses:
JOHN F. SEYMOUR,
J. WYMAN JONES.