

E. WRIGHT.

MECHANISM FOR OPERATING DOFFER-COMBS.

No. 172,541.

Patented Jan. 18, 1876.

Fig. 1.

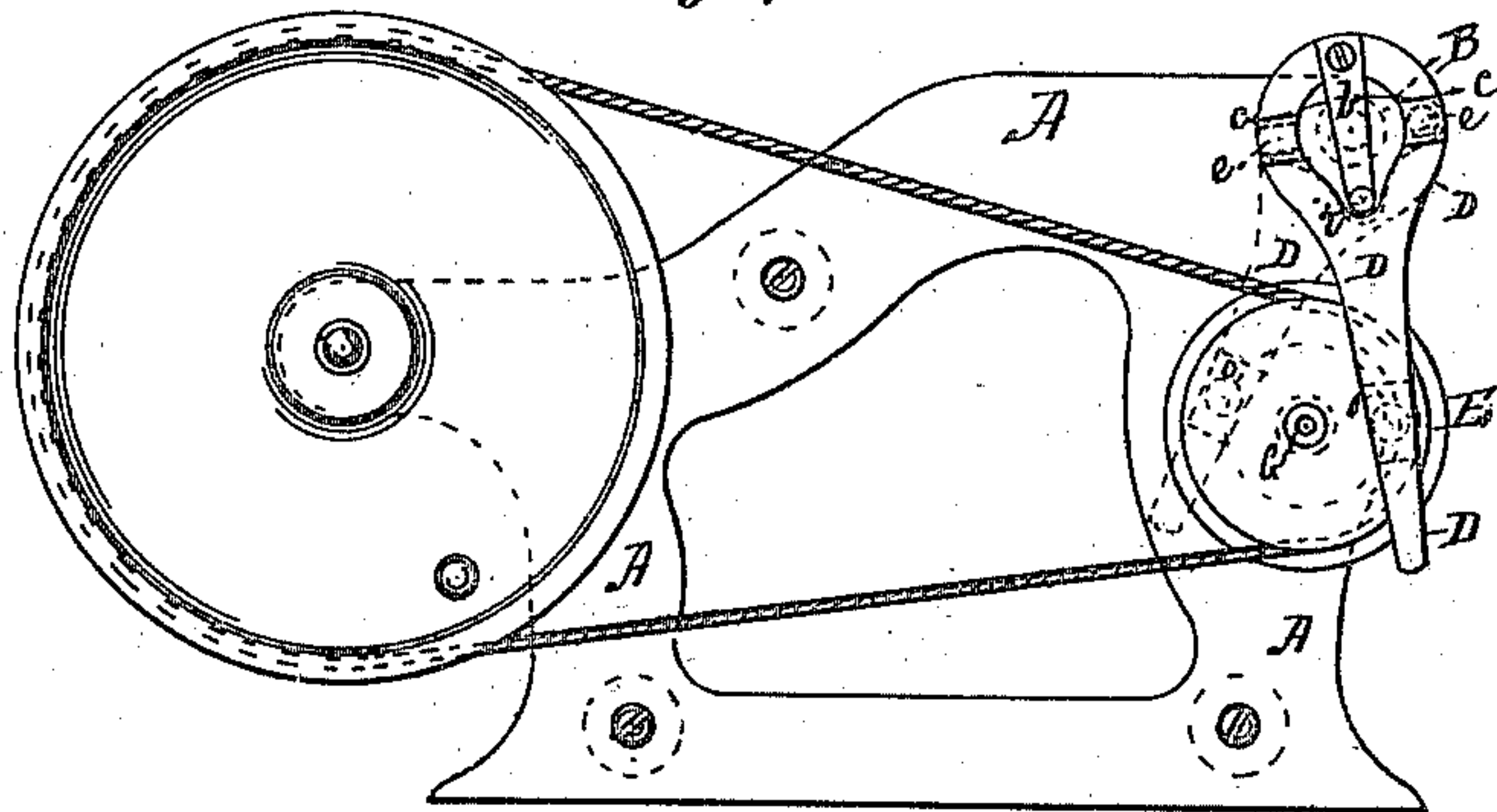


Fig. 2.

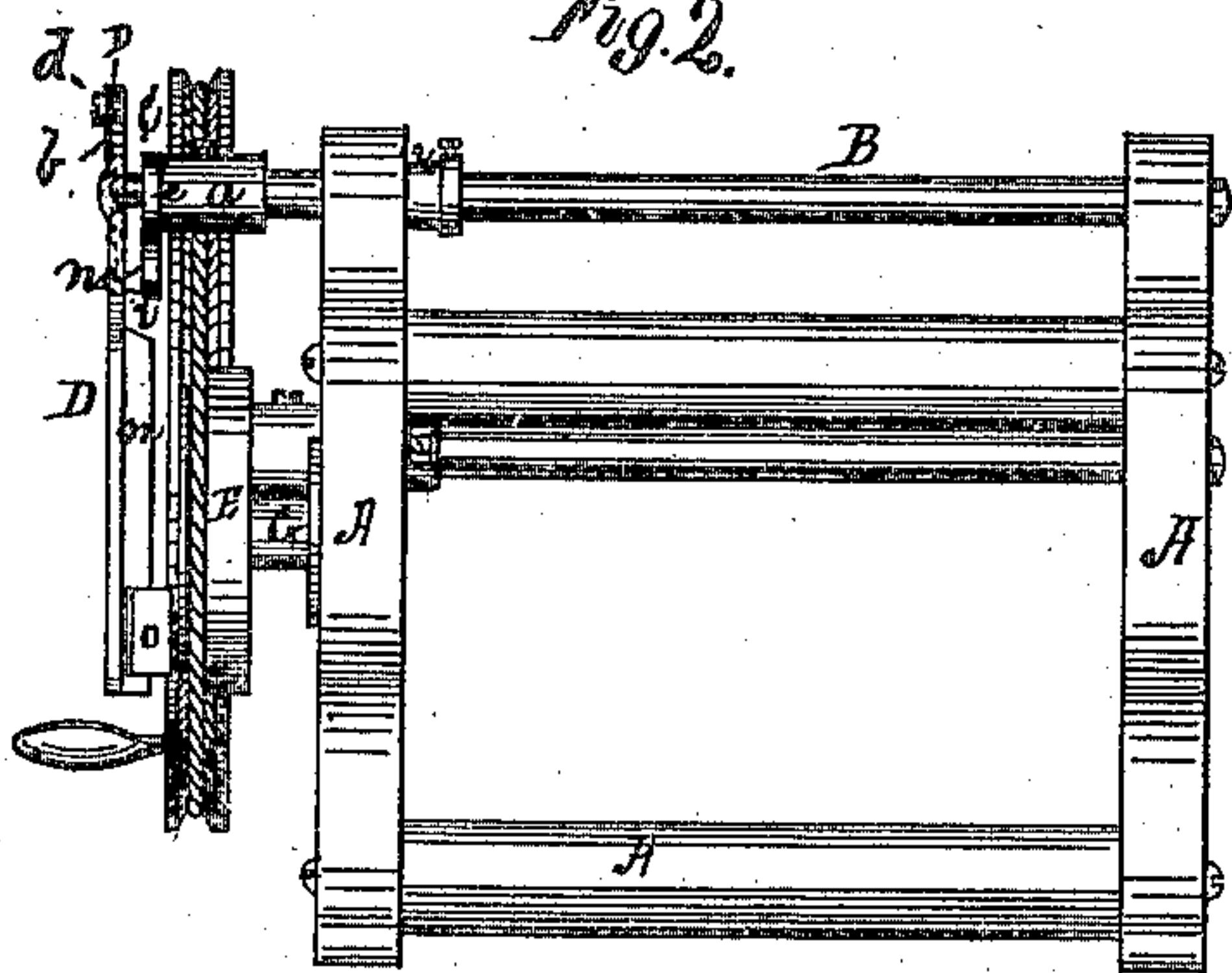


Fig. 3.

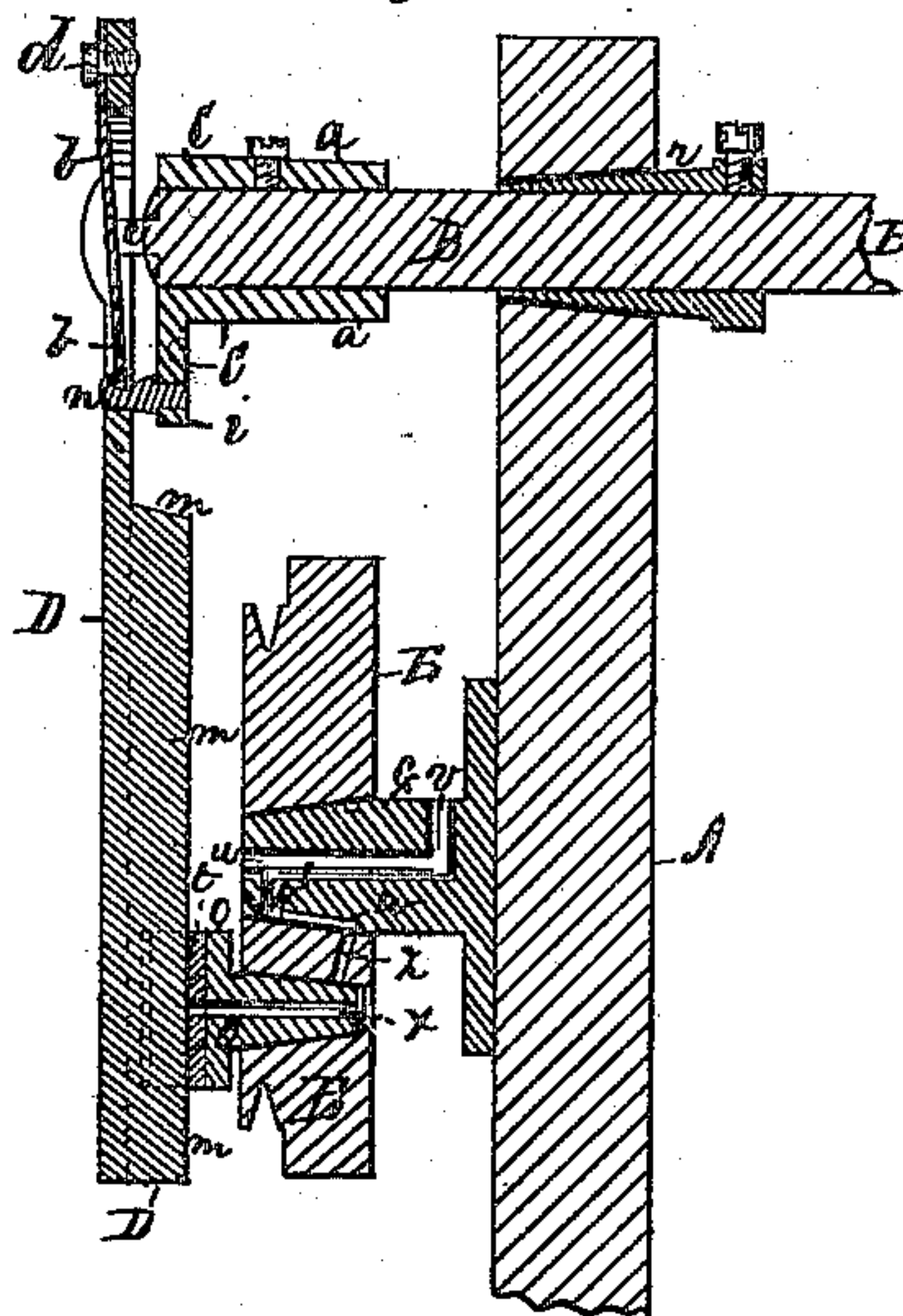


Fig. 6.

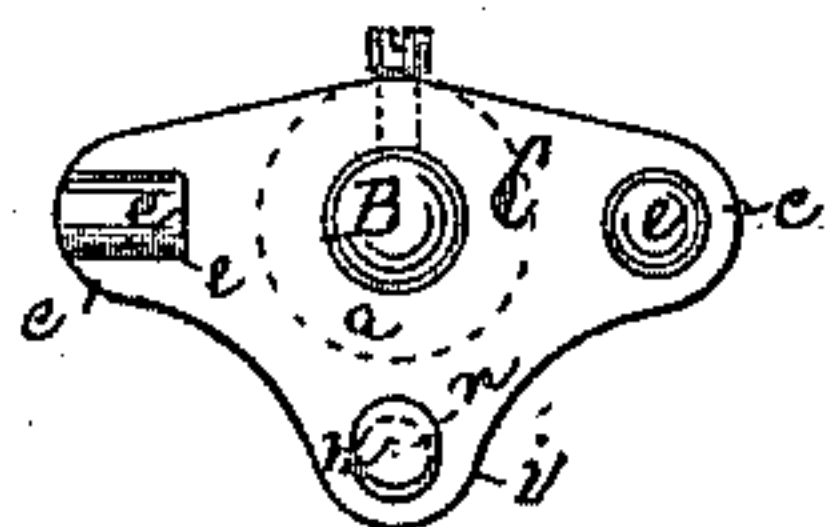


Fig. 4.

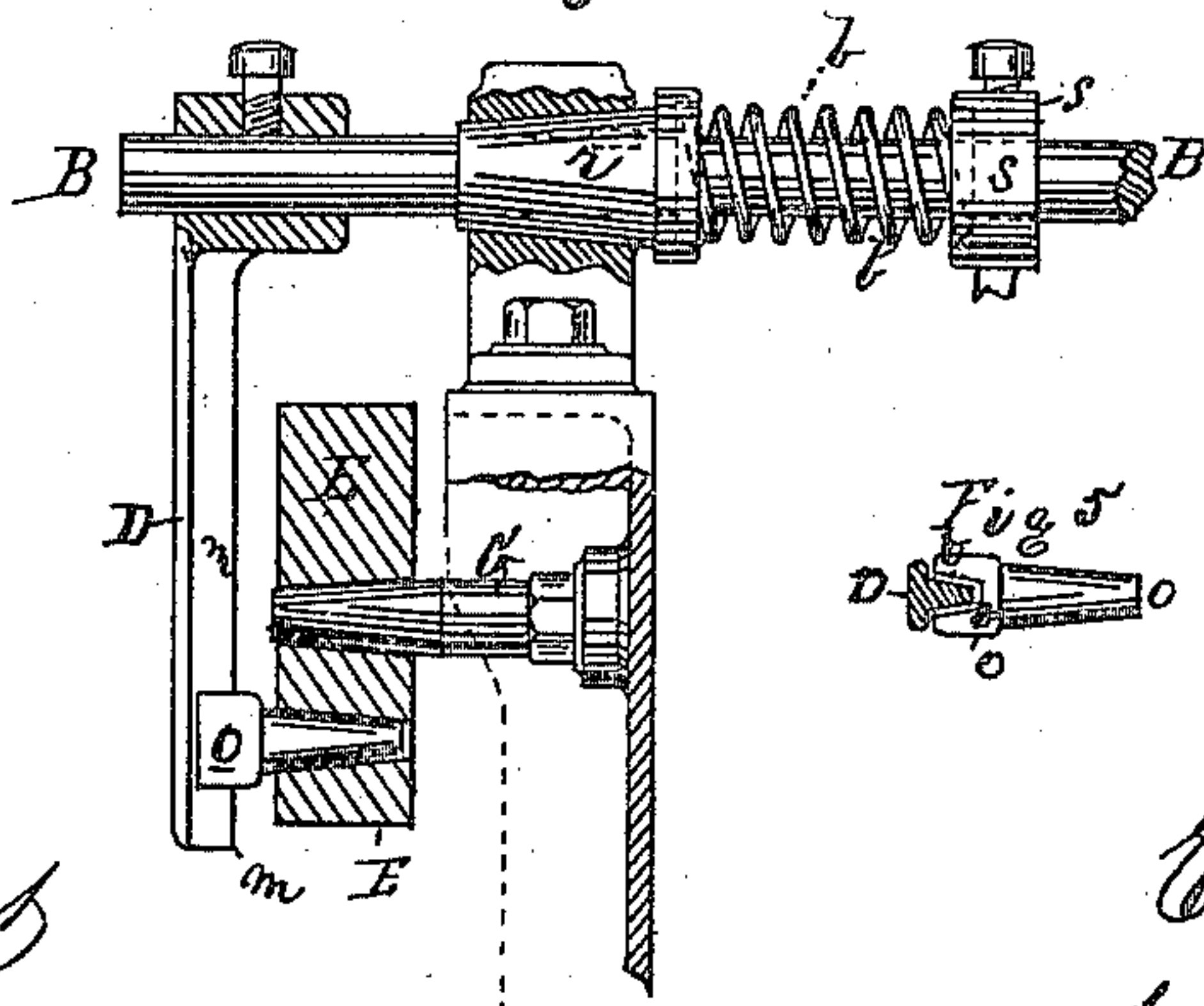


Fig. 5.

Witnesses.
D. C. Stuart
L. Van Rensselaer

Inventor.
Edward Wright
per P. Hamray
Atty.

UNITED STATES PATENT OFFICE.

EDWARD WRIGHT, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN MECHANISMS FOR OPERATING DOFFER-COMBS.

Specification forming part of Letters Patent No. **172,541**, dated January 18, 1876; application filed July 20, 1875.

To all whom it may concern:

Be it known that I, EDWARD WRIGHT, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Comb-Vibrators for Carding-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing and to the letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 represents a side elevation of my improved apparatus as applied to the comb rock-shaft, and Fig. 2 a rear elevation of the same. Fig. 3 represents a vertical transverse section of a portion of the apparatus, as taken through the center of the rock-shaft. Fig. 4 represents a similar view of a modified form of the apparatus. Figs. 5 and 6 represent detail views.

My invention relates to a new and improved mode of mounting and driving the vibrating doffer-comb of a carding-machine; and it consists in mounting the immediate driving-pulley of the comb rock-shaft and its crank-pin loosely upon conical bearings, and then holding said pulley and crank-pin snugly on said bearings, through the action of a spring directly or indirectly connected with said rock-shaft and its actuating crank-arm, whereby, as the bearings wear, they become self-adjusting, and constantly insure a smooth, even, and noiseless motion to the vibrating comb.

My improvement also consists in a new and improved method of oiling the bearings of the pulley, crank-pin, and actuating-arm of the rock-shaft, whereby the whole is effected simultaneously through a single oil-opening formed in the bearing of the pulley.

To enable others skilled in the art to make, construct, and use my invention, I will now proceed to describe its parts in detail, omitting a description of such parts of a carding-machine as are unnecessary to a full understanding of my improvement.

My improvements are equally applicable to wool and cotton carding machines, the comb being used for stripping the doffer in either

case. Moreover, the comb itself may be applied to its rock-shaft in any of the known ways, such forming no part of my present improvement.

Here, also, it may be stated that my improvements are equally as applicable to old as to new carding-machines specially constructed for their use. When applied to old, I use the style represented in Figs. 1, 2, and 3, as no alteration is necessary to be made in the bearings of the comb rock-shaft; but in new machines I prefer to provide externally conical or tapering bearings.

A represents a portion of the frame of an ordinary carding-machine, and B the rock-shaft, which carries the stripping-comb of the doffer, and which may be mounted in bearings in the ordinary way. In this condition, when it is desired to apply my improvement, as in the case of an old machine, I secure a head-piece, C, to its outer end, said head-piece consisting of a short hollow cylinder, *a*, cast in one piece with a cross head-piece composed of three arms, two, *e e*, of which are arranged diametrically opposite to each other, and carry pivotal pins *e*, on which the crank arm or lever D, through which a rocking motion is imparted to shaft B, rocks as on a pivot. The third arm, *i*, of cross-head C carries a stud-pin, *n*, the upper side of which is notched, so as to form an upward projection, as shown in Fig. 3, against which the lower forked end of a spring, *b*, finds a bearing. The forked ends of said spring embrace the sides of pin *n*, in order to hold that end securely in place.

The projecting ends of bearing-pins *e e* may either both be conical, or one of them conical and the other of elongated form, being lengthened in the line of the diameter of the cross-head, in which latter case its outer end will be smoothly rounded over in the arc of a circle. Suitable and corresponding depressions are formed in the inner face of the arm or lever D, for their reception. These pivotal pins are made somewhat longer than the bearing-point of the spring *b* on its pin *n*, so that when the arm D is fitted on said pivotal pins, and the spring *b* fitted on its notched bearing-pin *n*, and then firmly secured at its upper end, by the screw

d, to the upper portion of arm D, spring *b* will hold the latter securely, yet movably, to the cross-head C of the rock-shaft, constituting a self-adjusting spring crank lever or arm, the tendency of which is to turn the upper or shorter end of the lever D outward, and the lower or longer end inward, for a purpose shortly to be described. Arm or lever D is provided at its upper end with an opening, for the passage of spring *b*, and is otherwise formed and constructed substantially as shown in Figs. 1 and 2, it being also provided with an actuating guide-rib, *m*, on its inner face, which extends down its center in a radial line from the center of shaft B, from near the lower end of spring *b* to its lower end. Rib *m* of lever D fits and slides in a guide-groove formed in a loose crank-pin, *o*, which has its bearing in the actuating-pulley E.

The construction of said crank-pin is well illustrated in Figs. 3, 4, and 5, in the latter of which a cross-section is shown of the lower end of lever D in position. The groove of crank-pin *o* I prefer to line with leather *t*, or other soft anti-friction material.

By reference to Figs. 3 and 4 it will be seen that crank-pin *o* is provided with a conical stem, and finds a correspondingly-shaped bearing eccentrically arranged in pulley E.

Pulley E, in turn, is also provided with a conical or tapering socket, and turns on a correspondingly-shaped stud-pin or stationary axis, G. This construction of the bearings of the crank-pin *o* and pulley E enables the spring crank-lever D to keep them constantly adjusted as they wear.

By the use of a spring-pivoted lever, D, it will be seen that it enables my improvement to be applied to the comb rock-shaft of any ordinary carding-machine without change of bearings.

By constructing crank-pin *o* with an actuating-groove, and mounting it in a bearing, the rock-shaft can be worked more smoothly and evenly than if it were rigidly secured to the face of the pulley and actuated the crank-lever D by means of a slot on the latter. Moreover, it renders the application of a soft anti-friction material practicable, which the other does not, and enables the machine to be run smoothly and noiselessly.

In driving the comb-shaft, power is applied to pulley E from any properly-speeded pulley or shaft of the carding-machine or driving-engine.

These devices may also be applied to new machines, in which case I prefer to mount the cone-shaft in a conical bearing, as in Figs. 2 and 3, so that, as the bearings of the crank-pin *o* and pulley E wear, the shaft B may be readily readjusted; but, as a rule, in applying my improved method of constructing and mounting the actuating devices of the comb-shaft to new machines, I prefer the mode of doing so illustrated in Fig. 4. In this method the comb-shaft B at one end is mounted in a

bearing, *r*, of conical shape externally, and in a plain bearing at the other. Upon shaft B is arranged a spiral spring, *b*, the one end of which bears against the inner end of bearing *r*, and the other against the collar *s*, to which latter is secured the end of one of the arms that carry the comb. Collar *s* being firmly secured to the rock-shaft D, and the latter having free end play through bearing *r*, the tendency of spring *b* will be to draw shaft B through the bearing; but, as shaft B is provided with a crank-arm, D, which is rigidly secured to shaft B and bears on crank-pin *o*, its rib *m*, working in the groove of the latter, in the same manner as in the former case, spring *b* simply forces shaft B back far enough to draw crank-lever D up firmly against crank-pin *o*, thus keeping the latter, and through it pulley E, snugly up on their bearings, thereby rendering them self-adjusting as their surfaces wear. To this end it will be apparent that the pulley E should be made as light as possible consistent with the work to be done, that unnecessary strain may not be thrown on the spring.

Now, by reference to Fig. 3, it will be seen that stud or bearing pin G of pulley E is provided with a central opening or channel, *u*, and with two radial openings, *v* *v'*, the one, *v*, above and near its inner end, and the other, *v'*, below and near its outer end, the latter communicating with a longitudinal groove or depression, *w*, through which the bearing of pulley E is lubricated, the oil being poured in at opening *v*. A small channel, *z*, is also made to communicate between the bearing-opening of pulley E and the bearing-opening of crank-pin *o*, its upper end being sufficiently far in to communicate with the groove or depression *w* of bearing-pin G. This serves to lubricate the bearing of crank-pin *o*. Crank-pin *o* is also provided with a central channel, *x*, into which the surplus oil from its bearing passes at its inner end, and from thence to the groove in which the rib *m* of arm D slides back and forth, thereby lubricating the sliding surfaces of the two. Thus the whole of these bearings may be lubricated simultaneously through the single opening *v*.

Here it may be remarked that the outer end of channel *u* should be plugged up, to prevent the escape of oil at that point, for which purpose a short plug or screw-pin may be used. This done, the combined channels form a small reservoir, which will require less attention than if the lubrication were separately effected.

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

1. The loose pulley E and crank-pin *o*, having conical or tapering bearings, in combination with the comb rock-shaft B of a carding-machine, its crank lever or arm D, and spring *b*, the whole adapted to operate in the manner substantially as set forth.

2. The stud-bearing G, provided with the oil channels u , v , v' , and w , in combination with the pulley E, provided with the channel z , and the crank-pin o , having the channel x , all substantially as and for the purposes set forth.

In testimony that I claim the foregoing as

my own, I affix my signature in presence of two witnesses.

EDWARD WRIGHT.

Witnesses:

ABIEL E. WILSON,
DANIEL DAVIS, Jr.