(No Model.) 3 Sheets—Sheet 1.

B. BARON.

TOBACCO FEEDER FOR CIGARETTE MACHINES.

No. 543,838. Patented Aug. 6, 1895.

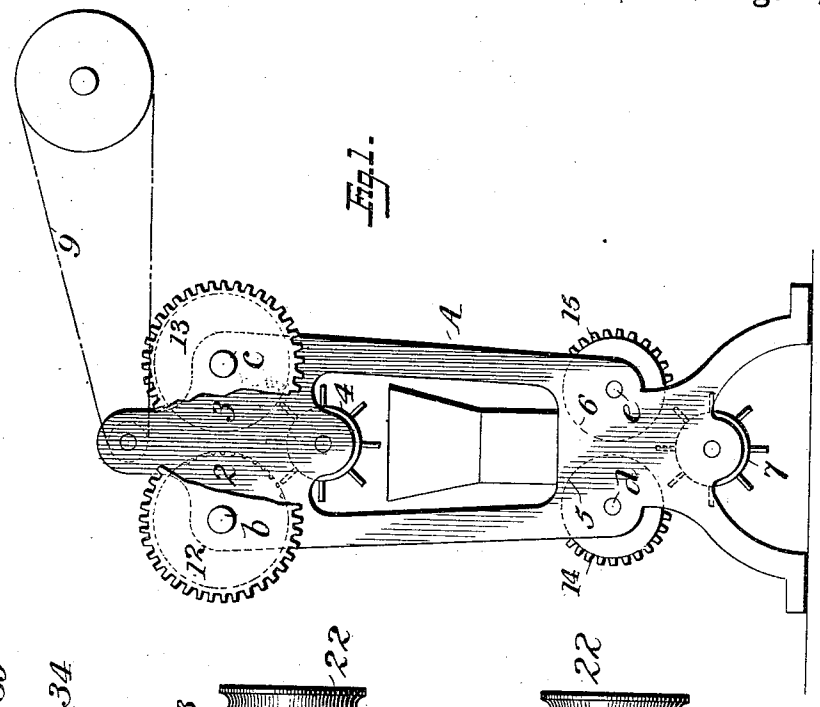

Fig. 1.

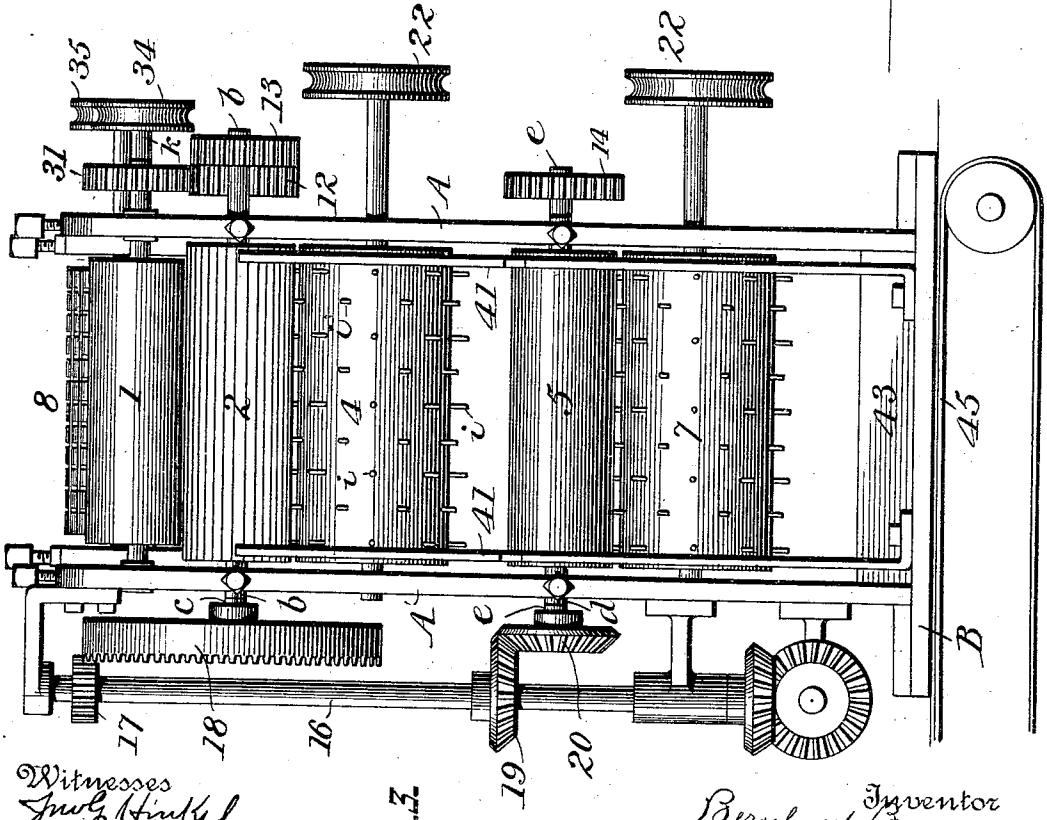

Fig. 2.

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Fig. 2.

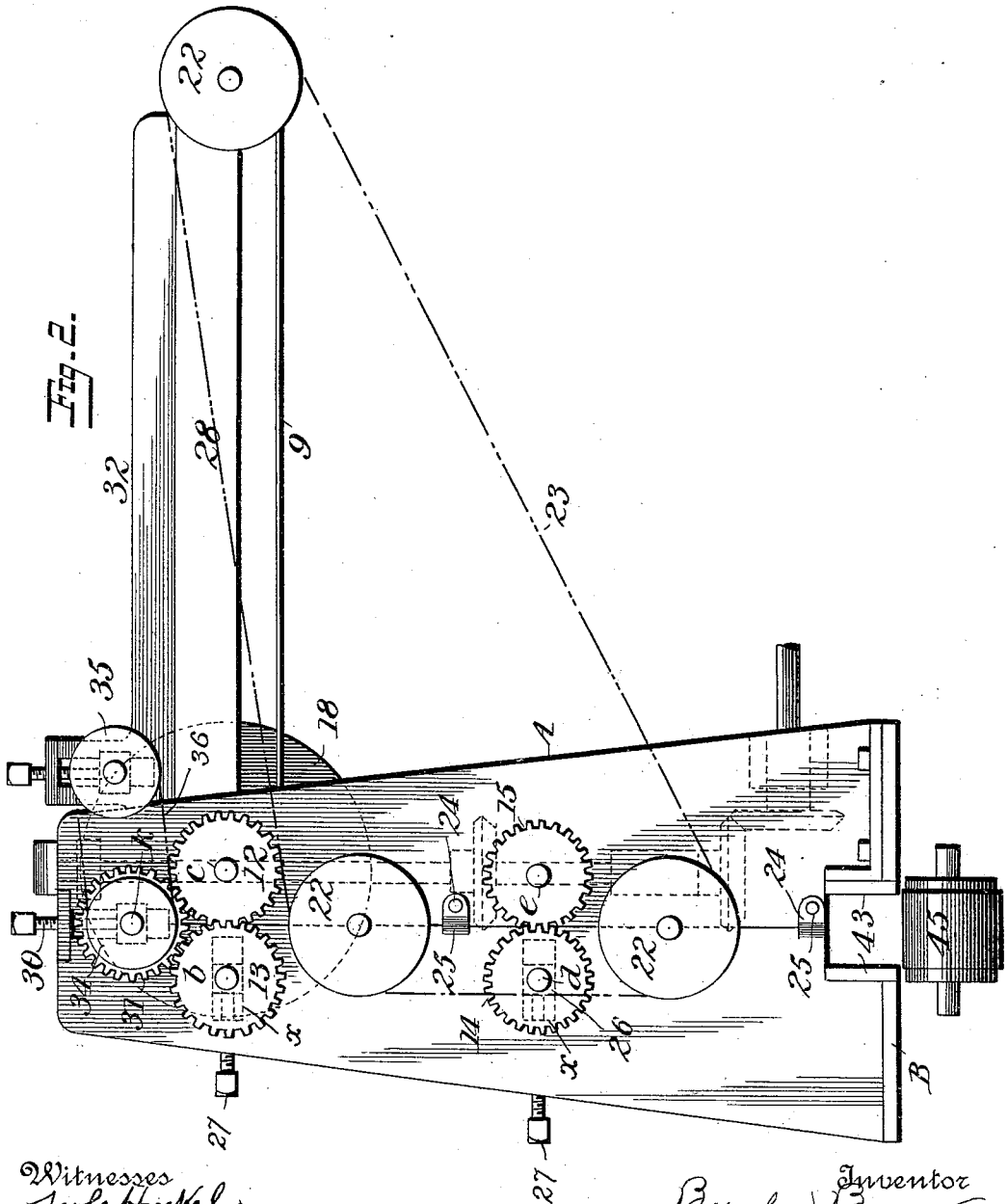

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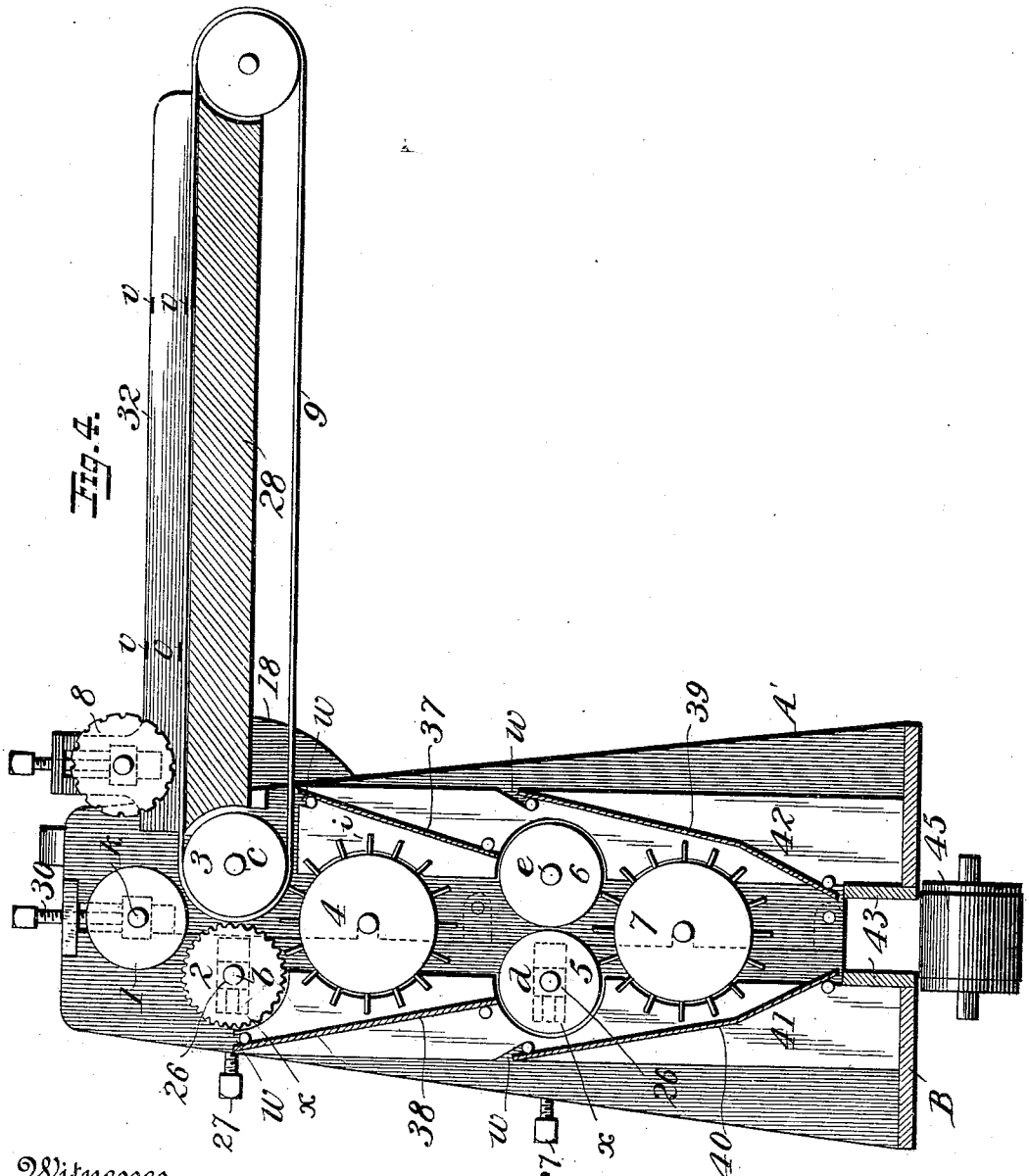
Fig. 4.



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UNITED STATES PATENT OFFICE.

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TOBACCO-FEEDER FOR CIGARETTE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 543,838, dated August 6, 1895.

Application filed November 17, 1893. Serial No. 491,215. (No model.)

To all whom it may concern:

Be it known that I, BERNHARD BARON, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Tobacco-Feeders for Cigarette-Machines, of which the following is a specification.

My invention relates to machines for feeding tobacco to cigarette-making machines; and my invention consists of certain devices constructed and operated as fully set forth hereinafter, and as illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a tobacco-feeder embodying some of my improvements. Fig. 2 is a side elevation of a feeder having additional features. Fig. 3 is a front elevation of the machine shown in Fig. 2. Fig. 4 is a longitudinal sectional elevation of the machine shown in Fig. 2.

In the construction shown in Fig. 1 there are two sets of picking devices, each consisting of two parallel feed-rolls and a picking-cylinder. The upper feed-rolls 2 3 are preferably of metal and may have plain surfaces or the surfaces may be grooved; but preferably, as shown, one is plain and the other grooved or serrated to a slight extent, and in some instances I prefer to drive one of the rolls—as, for instance, the grooved roll—at a speed slightly in excess of that of the other, whereby there is a slight drawing action upon the fibers of tobacco, which tends to separate them. Below the feed-rolls 2 3 is a picking-cylinder 4, preferably of wood, with teeth consisting of metallic rods or pins *i*, projecting radially and arranged in rows, the teeth of one row being intermediate of those of the other. The second set of picking devices consists of two rollers 5 6 and a picking-cylinder 7, which may be precisely like those of the first set; but preferably in the second set the rolls 5 6 have plain surfaces. In each set the picking-cylinder is driven much more rapidly than the rollers.

The tobacco is conducted to the upper feed-rolls in any suitable manner, being preferably distributed upon a feeding-band 9, which as it travels deposits the tobacco in uniform quantities between the feed-rolls which draw the same downward, maintaining a hold for a time upon the fibers as they are presented to the picking-cylinder 4, so that the latter can partially comb out and separate and spread the fibers and loosen any knots or masses, after which the fibers fall between the second set of feed-rolls 5 6, which bring the fibers together to a certain extent, but without knotting or bundling the same, and hold them to a certain extent while they are again acted upon by the second picking-cylinder. If desired, a third or even a fourth set of picking devices may be arranged to operate as before described, the result being that the bundles or bunches of fibers are completely separated, so that the fibers will fall onto a conveyer-belt or other receptacle in a condition to be formed into the desired cigarette-rod with the fibers and the smaller particles uniformly distributed, and this is effected without breaking the fibers or tearing them or forming fine particles of dust.

While I have found that a feeder having the elements above described, and illustrated in Fig. 1, answers admirably for many purposes, it is desirable for some grades of tobacco, and in order to secure uniform feeding without too much attention upon the part of the operator, to have additional features, and to this end I have made use of the construction in the remaining figures of the drawings. In the said construction the two sets of picking devices are arranged as in Fig. 1, the shafts of the different rolls turning in side frames A A′, bolted to a base B, the shafts *b c* of the rolls 2 3 having gears 12 13, the gear 13 having one or more less teeth than the gear 12 to rotate the roll 2 more rapidly than the roll 3, and the shafts *d e* of the rolls 5 6 having meshing-gears 14 15, while both sets of feed-rolls are driven from a shaft 16, having a pinion 17, gearing with a crown-wheel 18 on the shaft *c*, and a beveled wheel 19, gearing with a beveled wheel 20 on the shaft *e*, the shaft 16 being driven from any suitable power.

The picker-cylinders 4 7 may be geared to be driven from the shaft of the feed-rollers; but as said picker-cylinders revolve at a much higher rate of speed, I prefer to drive them by belts from an independent source, and therefore provide the shaft of each picker-cylinder with a grooved pulley 22, to receive a driving-band 23 passing around both pulleys.

As it is desirable to secure ready access to the picker-cylinders to make repairs in case of the breaking of the picker-teeth, I secure this end by forming each side plate A A′ in two sections, one section bolted to the base B and the other having ears 24, overlapping and bolted to the fixed section by bolts 25, upon removing which the outer section may be detached, and the bearings for the picker-cylinder shafts are formed in the meeting edges of both sections, so that on removing the outer sections the picker-cylinders can be readily withdrawn. In such case also the shafts *c e* turn in the fixed sections of the side frames and the shafts *b d* in the removable sections, so that by withdrawing the latter sections access can be had to all parts of the apparatus.

As tobacco is affected by changes in the atmosphere it becomes necessary at times to vary the operation of the devices which work upon it, and this may be done to a certain extent by supporting the feed-rolls adjustably. One means of doing this is by supporting each shaft *b d* in blocks 26, sliding in slots *x* in the side plate and capable of being moved in and out by means of set-screws 27. Other means of adjusting the bearings, however, may be employed.

Instead of supporting the feeding-band 9 upon a separate roll, as shown in Fig. 1, I have found best to extend it over a flat table 28 and around the feed-roll 3, the band thereby retaining a certain frictional hold upon the tobacco-fibers and carrying the same down positively between the rolls 2 3. I have found that the tobacco when lying between the rolls 2 and 3, especially when fed in too large quantities, is sometimes pushed back by the action of the rolls, and to remedy this I make use of a presser-roll 1, arranged above the feed-rolls 2 3 and slightly nearer to the roll 3 than to the roll 2, and I have found that as thus arranged all tendency of the material to squeeze back is prevented. To secure a proper adjustment the bearings of the shaft *k* of the roller 1 are adjustable vertically by means of screws 30, and on the said shaft *k* is a pinion 31, which gears with the wheel 12, the latter being made wider than the wheel 13 for this purpose.

One of the main difficulties of securing cigarette-rods of uniform dimensions has resulted from the failure of the operator to feed the tobacco uniformly, rendering it necessary to employ experienced and high-priced operators to secure uniform results. To obviate this difficulty I so mark the feed belt or band 9, or some part of the support thereof adjacent thereto, that the operator may know with certainty the space within which a given quantity of tobacco is to be deposited. Thus, supposing that there are transverse marks or lines *v* either upon the band itself or upon the table adjacent to the band at suitable distances apart, the operator can know that a certain weight of tobacco—say two ounces—must be deposited within these lines, and as each definite quantity of tobacco is thus placed upon the band a uniform quantity is fed during each unit of time or definite number of actions of the rolls or pickers.

In order to avoid the necessity of weighing each mass of tobacco deposited on the band I arrange side strips 31 32 at opposite sides of the band and of such height that the said side strips with the band will form between each two marks *v v* a receptacle of definite capacity, and the operator can know that when the tobacco is so placed as to fill the space between the two marks and the strips to the height of the latter, that the proper quantity of tobacco is distributed over the proper surface.

To aid in the feeding of the tobacco I make use of a feed-roller 8, that co-operates with the feed-band 9, the said roller turning in adjustable bearings and being driven from the shaft K through the medium of grooved rolls 34 35 and a belt 36.

In order that the tobacco may pass properly from one set of feed-rolls to the other, I make use of guide-plates 37 38 39 40, which may be secured in any suitable manner; but I prefer to arrange the plates between two vertical plates 42 41, having notches *w*, to receive pins extending from the sides of the plates near the upper edges, the plates 37 38 extending to the faces of the rolls 5 6 and the plates 39 40 extending within two vertical plates 43 43, which, together with the traveling belt 45, constitutes a trough or receptacle for the tobacco along which it is fed toward the filler-rod forming appliances, which may be of any suitable character.

While the roller 8 may be plain, I prefer to corrugate the same and also to make the gears of such a character that this roller will have a speed slightly in excess of that of the belt to insure the breaking up of the coarser bundles or bunches of fiber.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim—

1. The combination in a tobacco feeder, of parallel feed rolls occupying substantially the same horizontal plane, one of said rolls being plain and the other having grooves or serrations, means for driving said latter roll at a greater speed than the other roll, whereby the tobacco is subjected to a drawing action, and a picker cylinder arranged directly below the feed-rolls, substantially as described.

2. The combination with the feed rolls 2, 3, occupying substantially the same horizontal plane, and a picking cylinder 4 directly below said feed rolls, of an adjustable presser roll 1 above the feed rolls, substantially as described.

3. The combination in a tobacco feeder, of parallel feed rolls 2, 3, occupying substantially the same horizontal plane, devices for driving one of the feed rolls at a greater speed than the other, a picking cylinder 4 directly below the feed rolls, and an adjustable presser

roll 1 above the feed rolls, substantially as described.

4. The combination in a tobacco feeder, of parallel feed rolls 2, 3, arranged in substantially the same horizontal plane, a picking cylinder 4, directly below the feed rolls, a feed band 9, a presser roll 1 above said feed rolls, and a feed roll 8 arranged above the said feed band and adjacent to said presser roll, substantially as described.

5. The combination in a tobacco feeder, of parallel feed rolls 2, 3, arranged in substantially the same horizontal plane, one of said rolls being plain and the other grooved, devices for driving one of said rolls at a greater speed than the other, a picking cylinder arranged directly below the feed rolls 2, 3, an adjustable presser roll 1 above said rolls, and a feed roll 8, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BERNHARD BARON.

Witnesses:
C. J. SHEARN,
FRANCIS T. GRIBBINS.