No. 614,314. Patented Nov. 15, 1898.

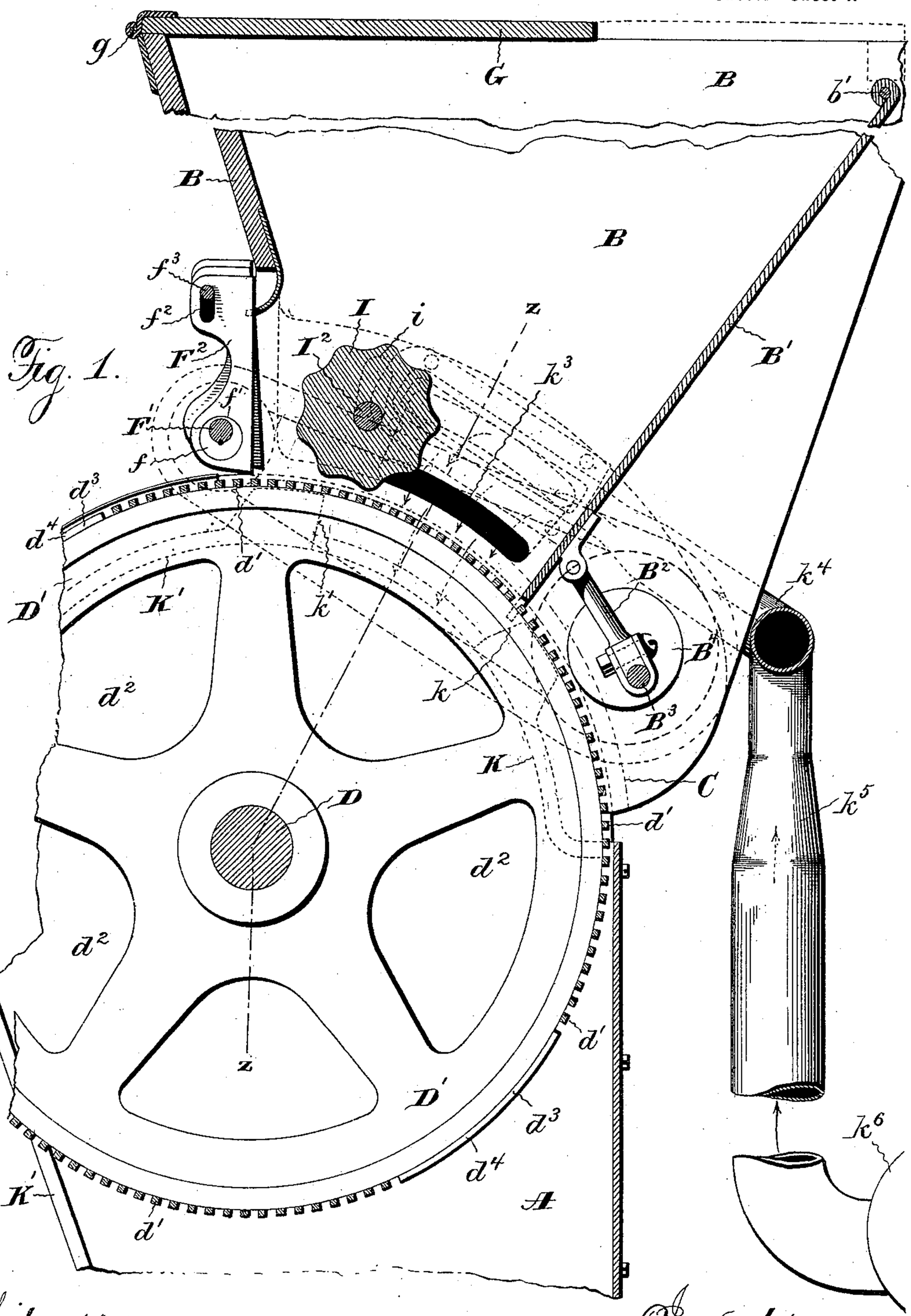
J. P. WRIGHT.

MECHANISM FOR FEEDING MATCH SPLINTS.

(Application filed Mar. 30, 1897. Renewed Aug. 10, 1898.)

(No Model.) 7 Sheets—Sheet 1.

Fig. 1.



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(No Model.) 7 Sheets—Sheet 2.

Fig. 2.

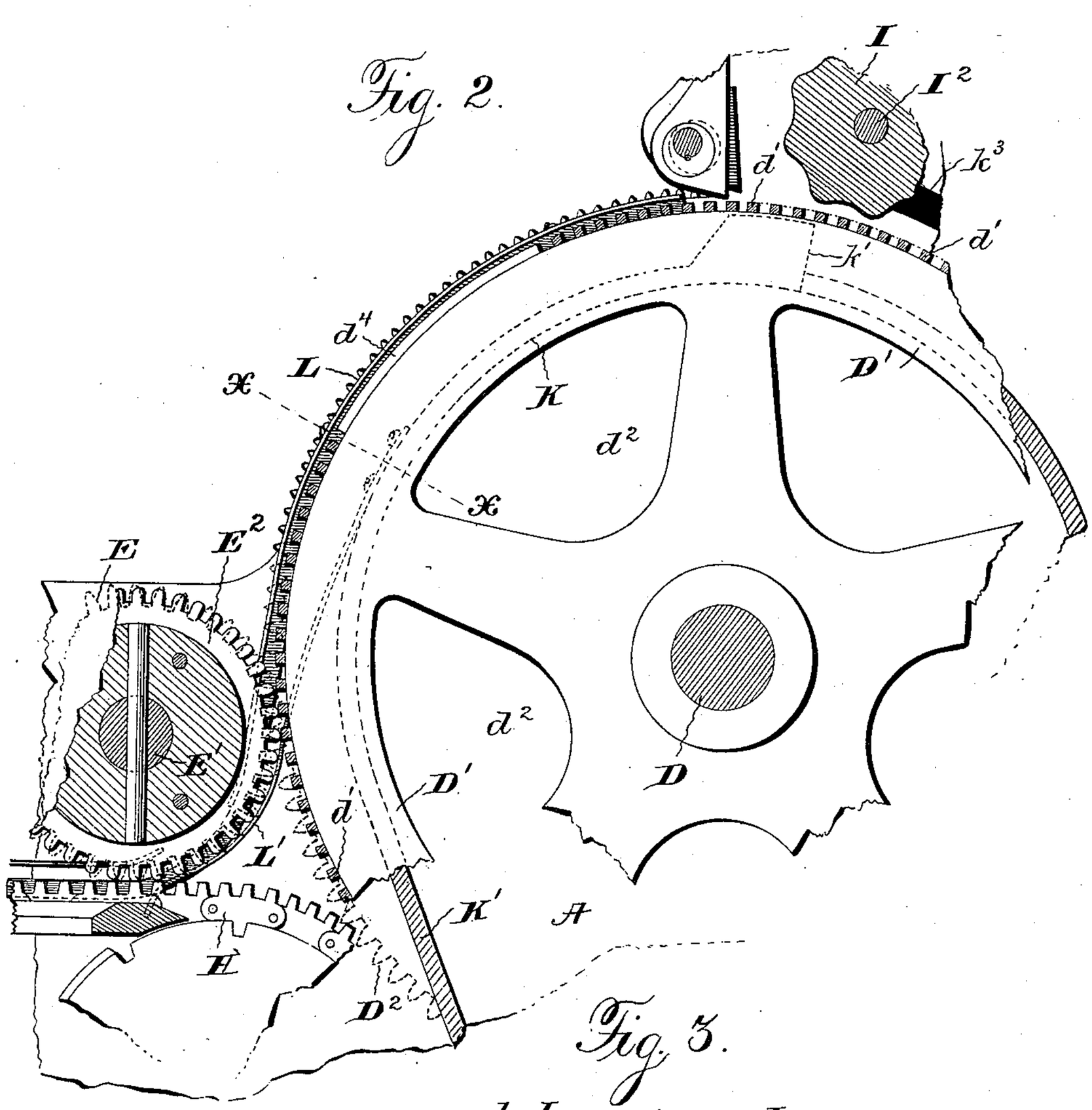
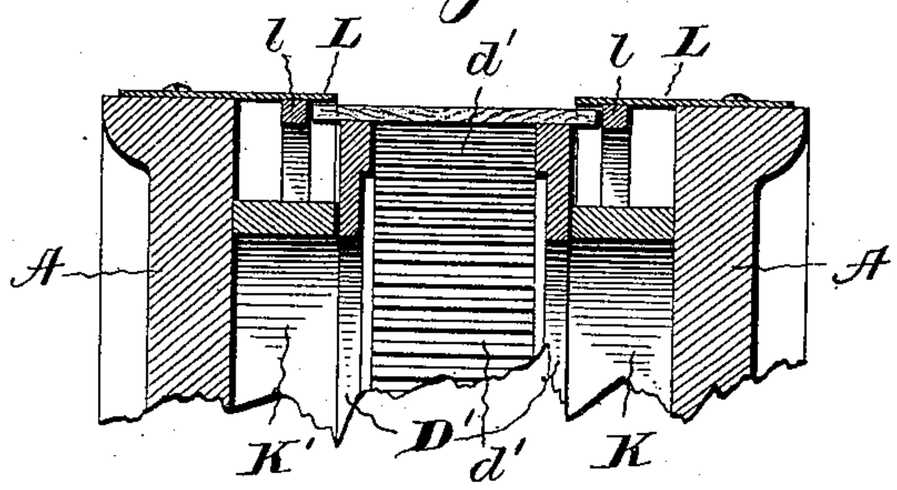


Fig. 3.



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(No Model.) 7 Sheets—Sheet 3.

Fig. 4.

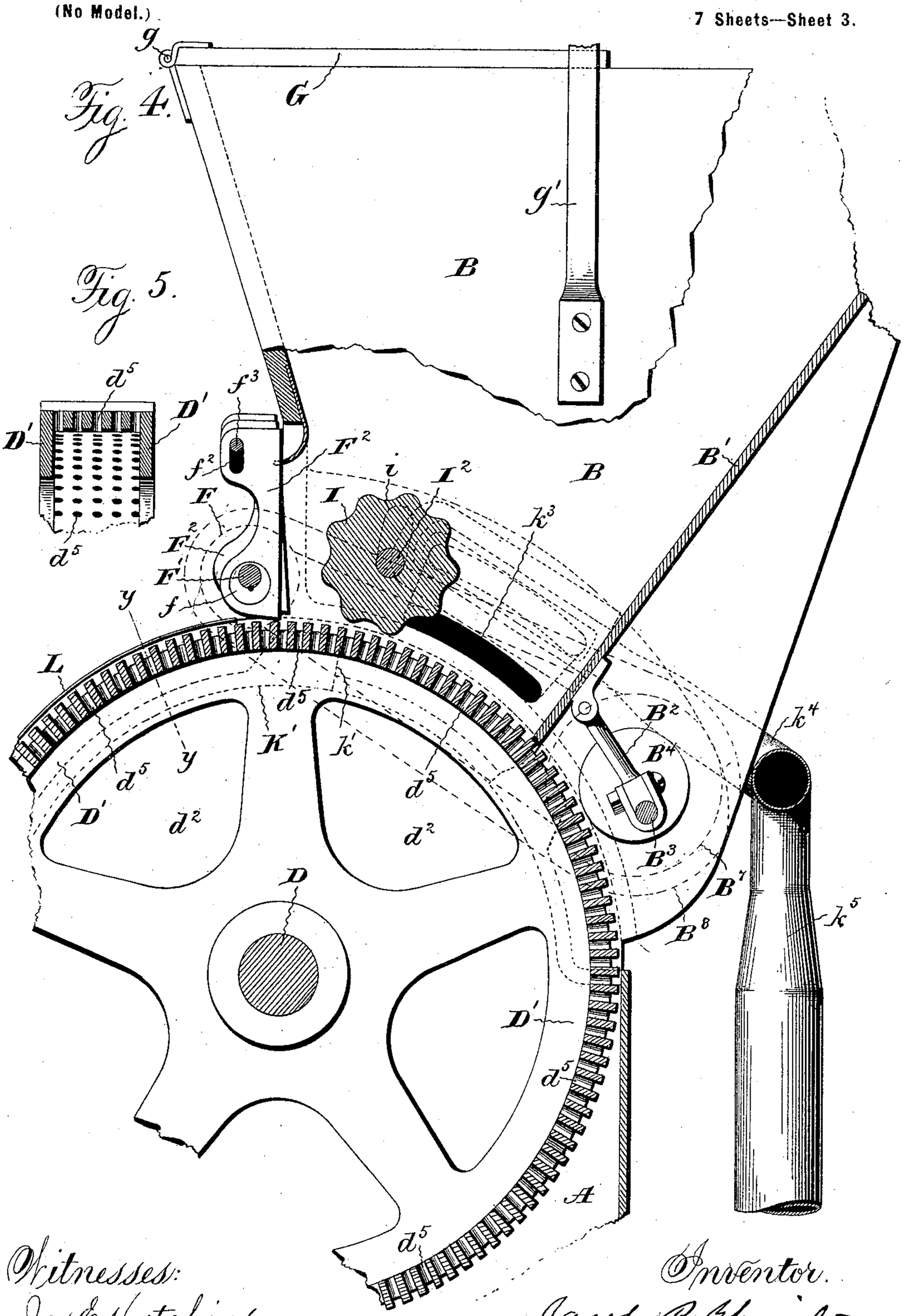

Fig. 5.

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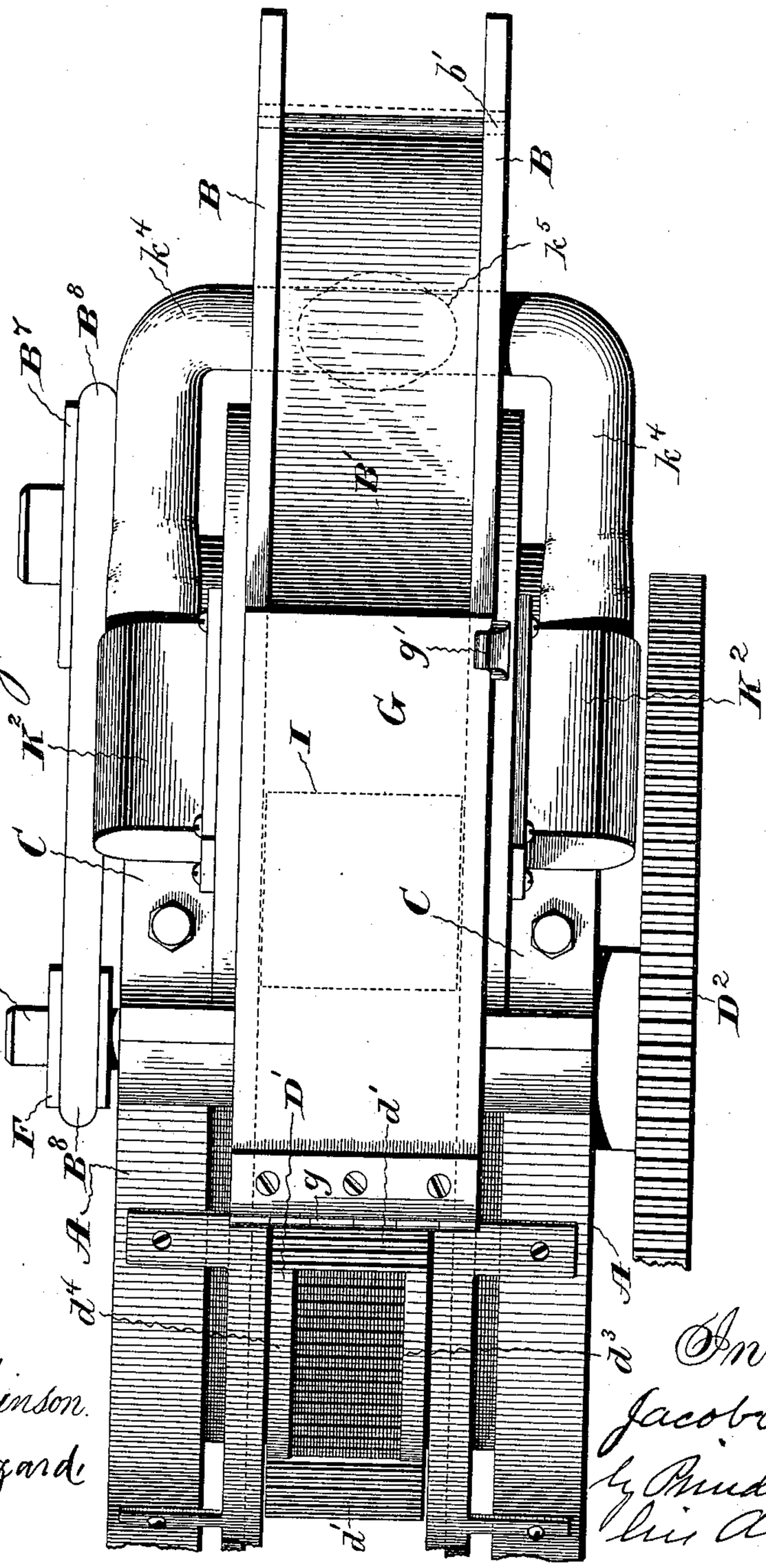
(No Model.) 7 Sheets—Sheet 4.

Fig. 6.



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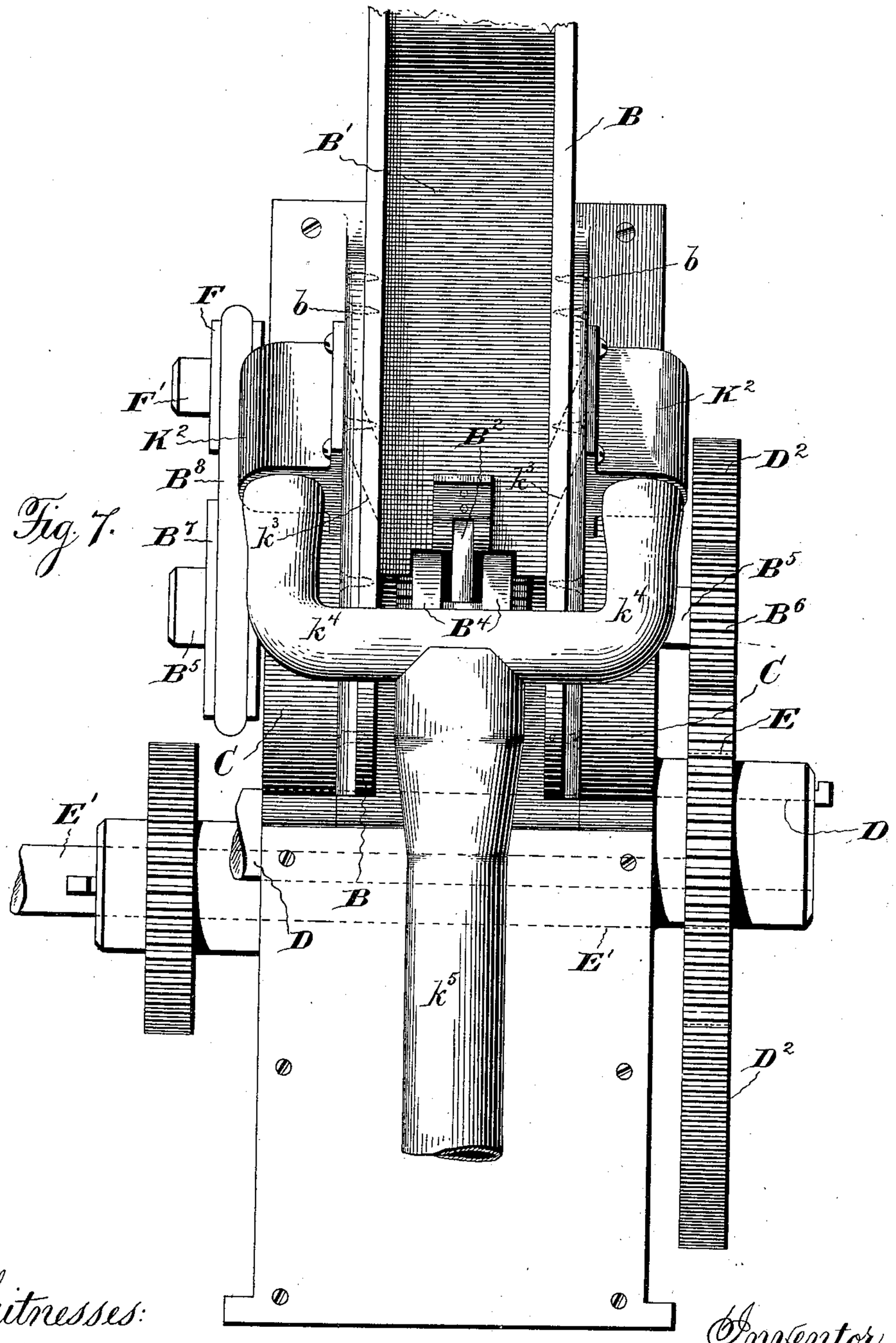
(No Model.) 7 Sheets—Sheet 5.

Fig. 7.



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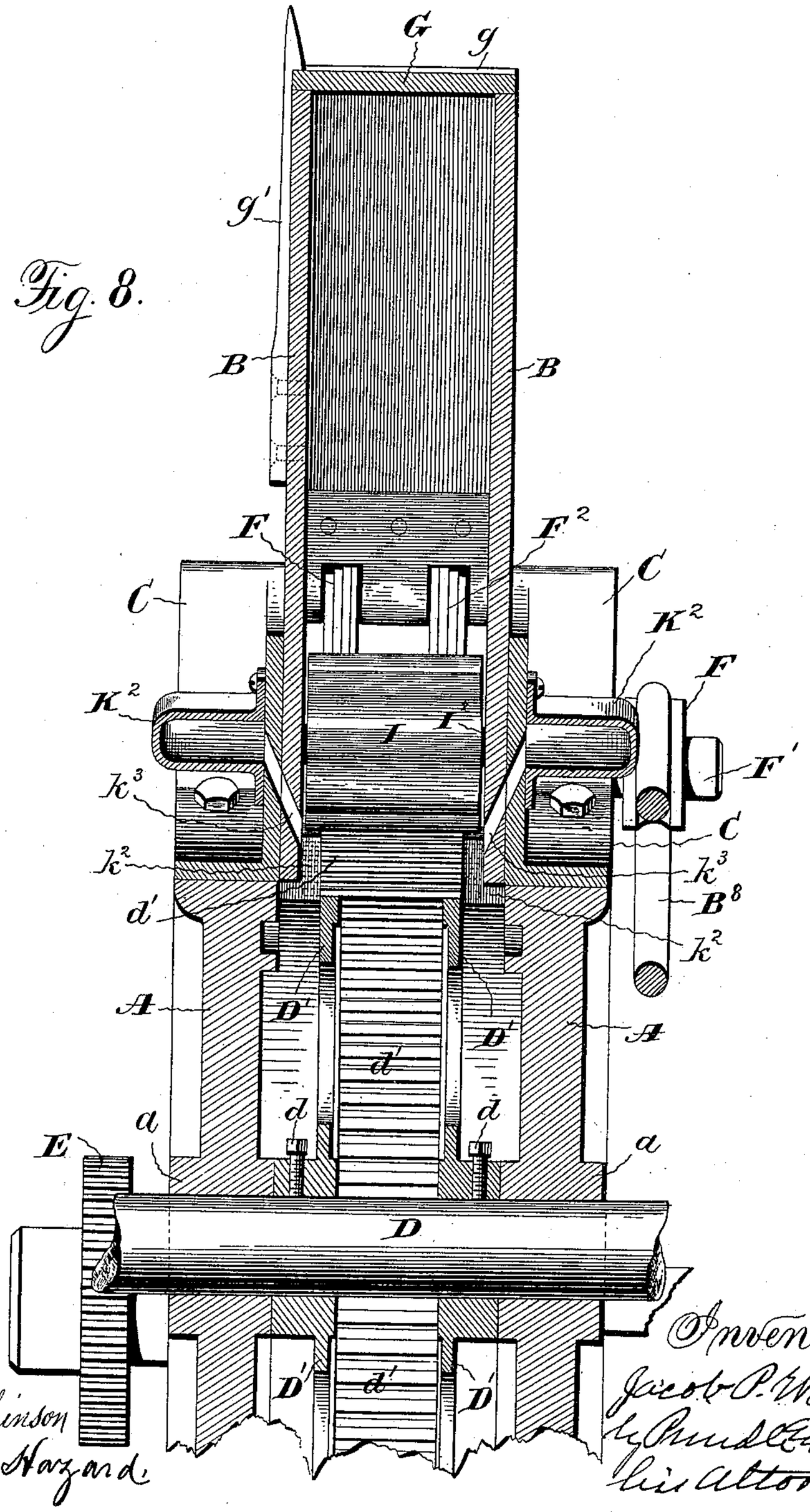
(No Model.) 7 Sheets—Sheet 6.

Fig. 8.



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(No Model.) 7 Sheets—Sheet 7.

Fig. 9.

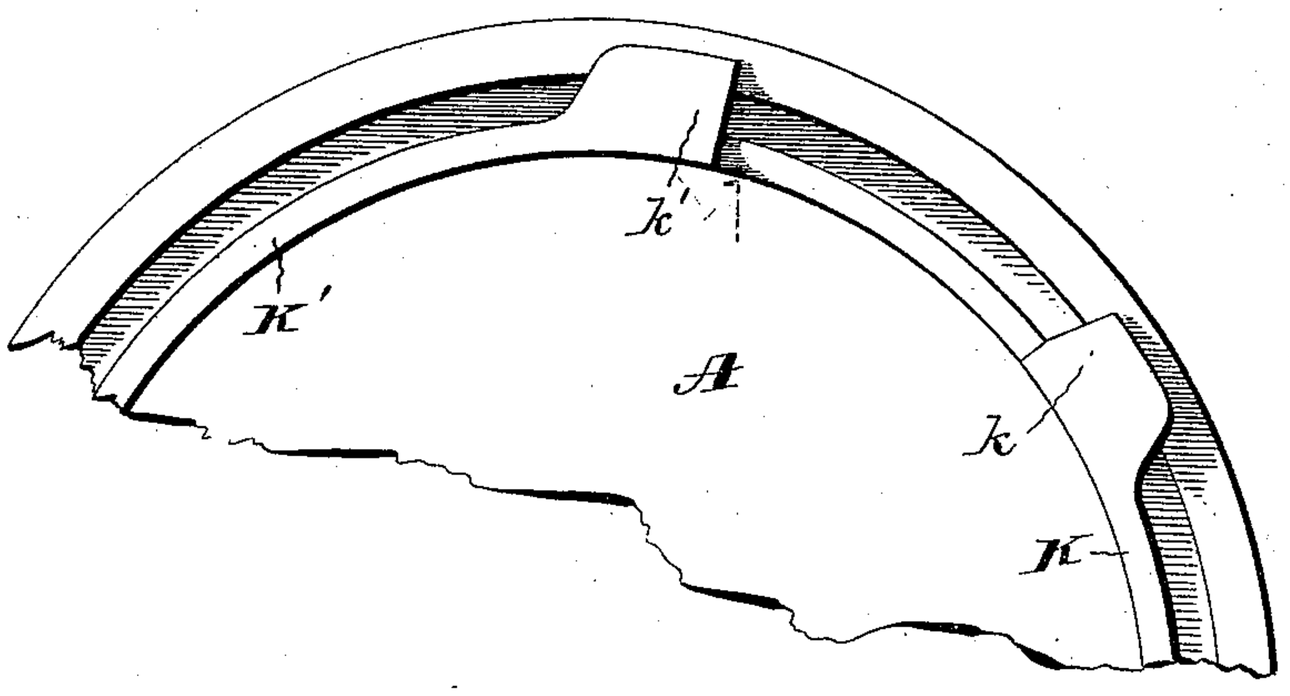
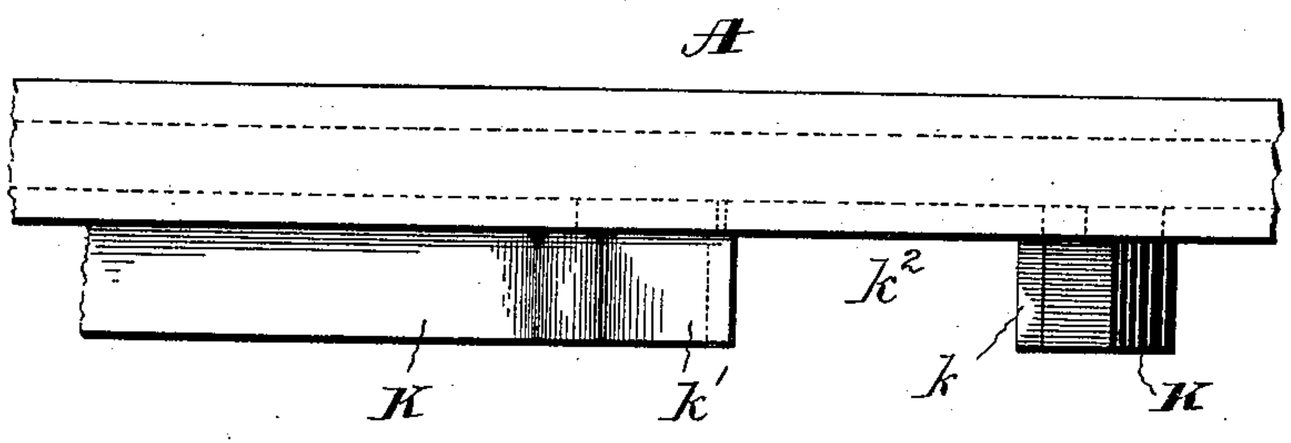


Fig. 10.



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR FEEDING MATCH-SPLINTS.

SPECIFICATION forming part of Letters Patent No. 614,314, dated November 15, 1898.

Application filed March 30, 1897. Renewed August 10, 1898. Serial No. 688,313. (No model.)

To all whom it may concern:

Be it known that I, JACOB PULVER WRIGHT, of New Haven, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in Mechanism for Feeding Match-Splints and the Like; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a view of a vertical section of a portion of a match-making machine with my invention applied thereto; Fig. 2, a similar view showing a portion of the feed-drum, the hopper, and the transfer devices to which the splints are to be transferred from the drum; Fig. 3, a view of a section on line *x x* of Fig. 2; Fig. 4, a view, partly in vertical section and partly in elevation, of a portion of a match-making machine with my invention applied thereto and with the feed-drum having a series of perforations through the bottoms of its splint-receiving pockets, instead of the open-bottomed pockets, as shown in Figs. 1, 2, and 3; Fig. 5, a view of a section on line *y y* of Fig. 4; Fig. 6, a plan view of the mechanism shown in Fig. 1; Fig. 7, a view in end elevation of the mechanism shown in Figs. 1 and 4; Fig. 8, a view of a section on line *z z* of Fig. 1; Fig. 9, a detail view showing in elevation a portion of the casing at the side of the feed-drum, and Fig. 10 a detail plan view of the same portion of the casing.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention has been to provide improved means for feeding match-splints for use in match-making machines; and to this end my invention consists in the splint-feeding means and in the parts thereof constructed, arranged, and combined as hereinafter specified.

While I shall show and describe my invention as applied to and used in a match-making machine in which the splints from the feed-drum are transferred to a rotary transfer device and thence shifted into the pockets of a traveling carrier, I desire it to be understood that I do not limit myself to such application or use of my invention, but contemplate employing it with any match-splint-bundling machine or match-making machinery wherever it is desirable that the splints be fed out from a source of supply and carried as fed out to other parts of the machine to be operated upon in any way. I also contemplate using my feeding means for feeding other things than match-splints, either alone, as means for feeding out the sticks or bars of material, or with mechanism to which the feeding means is desired to deliver the sticks or bars.

In the drawings, A A designate the upright parallel sides of a casing from the upper edges of which is supported the hopper B for the match splints, sticks, or other material to be fed. The interior of this hopper is made narrower than the space between the casing sides A A, as shown best in Fig. 8. The sides of this hopper are fastened by screws *b b* to the upright portions of the angle-plates C C, which in turn are bolted to the tops or upper edges of the casing sides A A. (See Figs. 6, 7, and 8.

Supported in suitable bearings *a a* in the casing sides A A is a shaft D, carrying the rotary feed-drum D′, fixed to it within the casing, such drum being narrower than the interior width of the hopper B and having a portion of its periphery on its upper side moving through the open lower end of the hopper in such position that splints or sticks placed crosswise in the hopper will rest upon that portion of the periphery of the feed-drum which may at any time be within the lower end of the hopper. With this arrangement the drum revolving partly within the hopper always forms with some portion of its periphery a bottom for the hopper, which bottom, being narrower than the hopper interior, leaves open narrow spaces on opposite sides of it between its sides and the inner walls of the hopper for a purpose to be explained hereinafter. As shown in Fig. 1, 2, 3, 6, 7, and 8, this feed-drum D′ consists of two side plates secured to shaft D by set-screws *d d* or otherwise, as desired, and having their outer edges connected by transverse ribs *d′ d′* of a thickness equal to the distance by which it is desired that the splints or sticks which are to be fed out by the drum shall be separated

from each other. Each of these ribs is from its outer to its inner face of a thickness equal to that of one of the splints or sticks to be fed and is separated from the adjoining ribs by a distance substantially equal to or slightly greater than the thickness of a splint or stick, so that one of the latter can drop readily down between adjacent ribs. With this construction and with the ribs d' d' connected with and projecting out beyond the edges of the sides of the drum D′, as shown in the drawings, pockets to receive the splints or sticks from the hopper will be formed on the drum, having the edges of the drum sides to form supports for the splints or sticks near their opposite ends and bottoms open between such splint-supports.

As the drum D′ is narrower than the hopper B, any sticks or splints long enough to extend substantially across from side to side of the latter will when resting in the described pockets of drum D′ project at their opposite ends beyond the drum sides, as indicated in dotted lines in Fig. 8. The open bottoms of these pockets form elongated openings, through which air can readily pass and through which any chips, short splints, or pieces of splints too short to extend across from one side of the drum to the other can fall into the interior of the drum clear of the hopper-bottom. The side plates or disks forming the drum sides are provided with large openings d^2 d^2, out through which any chips, short splints, or pieces of splints falling into the drum through the elongated openings in the bottoms of the splint-receiving pockets of the drum can readily pass.

In the form of drum shown in Figs. 1, 2, 3, 6, 7, and 8 there are two series of splint or stick receiving pockets, formed in the manner described, and between the opposing ends of such series are the large openings d^3 in the drum periphery, large enough to allow the passage into the interior of the drum when one of such openings is being carried along past the open bottom of the hopper and below the mass of splints in the hopper of pieces of splints and even of full-length splints which may be lying in the lower part of the hopper crooked or out of parallel with the ribs d' d' and the pockets of the drum.

In order that the mass of splints lying straight in the hopper parallel to the axis of the drum and the pockets of the latter may not when the openings d^2 d^2 come around under them drop down below the plane of the travel of the outer side of the ribs d' d' on the drum, I provide the peripheries of the side plates of the drum with ribs d^4 d^4, extending peripherally around the plates from a point near the end rib of one series of ribs d' on the drum to a point near the end rib of the adjoining series of ribs. The space between each end rib d' and the adjoining ends of the ribs d^4 is preferably made large enough to admit one of the splints or sticks to be fed.

The form and construction of the feed-drum shown in Figs. 1, 2, 3, 6, 7, and 8 are substantially like that described and shown in United States Patent No. 586,890, issued July 20, 1897, and the means for rotating it and for moving the back of the hopper and operating the clearing-plates at the outlet side of the hopper are the same as those shown and described in said other patent for the same purpose. I do not, therefore, claim such drum, the hopper with its swinging back, or the clearing-plates or the means for actuating such parts herein, and consequently need not go at length herein into a description of the details of the construction or operation of such parts or the means for driving them, but will refer for such description of details to said other patent.

As shown in the drawings of the present case, the hopper B has its back B′ pivoted at its upper end to the hopper sides at b', its lower end being left free to swing forward and back over and close to the pocketed periphery of the feed-drum D′, so as to jar the splints in the hopper and straighten them out into parallelism with each other and with the splint-receiving pockets of the drum, so that they will when in the lower part of the hopper, just over the drum periphery, be in position to fall squarely into any drum-pocket brought just under them by the rotation of the feed-drum.

The free end of the hopper-back B′ is actuated by the pitman B^2, which is driven by the crank-pin B^3, connecting the two crank-disks B^4 B^4 on shaft B^5, journaled in suitable bearings in the angle-plates C C. On one end of this shaft is a pinion B^6, meshing with and driven by the large gear-wheel D^2, fixed on the feed-drum shaft D, which gear-wheel is in turn driven by the gear E, fixed on and rotating with the shaft E′, which is to be driven by any suitable gearing or mechanism connected with and actuated by any suitable source of power. On the other end of shaft B^5 is a grooved pulley B^7, which drives a belt B^8, driving a second grooved pulley F, fixed on the shaft F′, passing through and journaled in bearings in portions of the angle-plates C C. This shaft F′, which extends across an opening in the forward or outlet side of the hopper B above the feed-drum D′, carries a series of eccentrics f f, one of which is shown in Figs. 1, 2, and 4, each engaging an opening f' in one of the swinging and rising and falling plates F^2 F^2, each of which near its upper end is guided by a guide-slot f^2 in it engaging a stationary cross-rod f^3, all as fully described in the patent hereinbefore referred to. As explained in such patent, the eccentrics are so arranged relatively on the shaft that as the latter revolves the plates will be moved in pairs which will have an inwardly or rearwardly swinging and rising movement with reference to the hopper, which movement will cause them to kick back and clear away any splints coming to the outlet of the hopper and not seated in the pockets

of the feed-drum, the purpose and result being to clear back any unseated splints close to the feed-drum periphery and so prevent any clogging or jamming of the splints at the point where the moving drum periphery passes on out of the hopper. Unlike the hopper shown in said patent, that shown in the present case has on its top a hinged lid G, which extends over and covers the forward portion of the top of the hopper, and being hinged to the hopper at *g* is held normally down in place by the spring-catch *g'*. This lid, which could, if desired, be made to cover the whole hopper-top, but is preferably made to extend only over about half thereof, is for a purpose which will be explained hereinafter.

The shaft E' is the one which in the machine shown and described in the patent hereinbefore referred to carries the rotating transfer device, which receives the splints from the pockets of the feed-drum and transfers them to the intermittently-moving pocketed chains of the transfer-carrier. One side of such rotary transfer device and a portion of one of the pocketed chains of such transfer-carrier are shown in Fig. 2 at E^2 and H, respectively.

Within the forward part of the lower portion of hopper B is the transverse roller I, preferably made of lead or some other heavy material, having its periphery fluted longitudinally, with the higher parts of the flutes rounded off. This roller has its shaft I^2 projecting beyond each of its ends into a slot *i* in the hopper sides, such slot being an upright one, so as to leave the roller free to rise and fall a certain distance. One of these slots is indicated by dotted lines in Fig. 1. The lower ends of these slots are so situated as to prevent the roller I from descending far enough to come into contact with the periphery of the feed-drum D', while allowing the portions of the roller which are of the greatest radius to come quite close to the drum-periphery. As shown, this fluted roller I is not driven by any gearing, but rotates freely as the splints, carried forward within the lower part of the hopper by the rotation of the feed-drum, pass under it, the roller yielding and rising as the splints tend to become packed or jammed too closely between the traveling feed-drum periphery and the under and rear side of the roller. As the roller rotates and presses with its weight upon the splints passing under it it acts to straighten out any crooked or inclined splints into parallelism with its flutes, and consequently with each other and the drum-pockets, and causes any splints which may be partially or unevenly seated in the drum-pockets to be wholly and squarely seated in the latter, so that they will pass freely out of the hopper under the plates F^2 F^2 with the feed-drum.

Attached to the inner side of each upright plate A of the casing is an inwardly-projecting curved rib or plate K, which, beginning at a point beyond the rear side of the hopper B, extends upward and forward on a curve concentric with the feed-drum D' to a point below the rear side of the splint-containing interior of the hopper. This rib or plate is so situated as to be in close contact with the side of the feed-drum on a line at some distance from the plane of the bottoms of the pockets in the drum periphery and has on its inner and upper end an upwardly-projecting portion *k*, extending up close to the plane of the pocket-bottoms. A similar curved rib or plate K' is attached to the inner side of each casing-upright A, beginning at a point a short distance to the rear of the front side of the hopper interior and running thence forward and downward, as indicated in Fig. 2. This rib or plate has on its upper and rear end a projection *k'*, similar to the one *k* on the other rib. With this construction a clear passageway from the hopper down between each of the hopper sides and the corresponding side of the feed-drum is provided in communication with the larger space below between the feed-drum and the upright portion of the casing, while to the rear and front of such passage the space between the feed-drum and upright parallel sides A A of the casing is closed by the ribs or plates K and K'. The projections *k* and *k'*, with the ends of the ribs or plates K and K', carrying them, form, then, two throats or passages k^2 k^2, extending downward from the hopper to the space between the feed-drum sides and the casing sides A A, each of which throats is directly below a portion of the hopper interior. Above the throats k^2 k^2 are the two inwardly and downwardly extending air-passages k^3 k^3, cut through the angle-plates C C and the walls of the hopper sides, so that their lower ends communicate with the hopper interior at a short distance, preferably in a working machine about half an inch above the plane of the periphery of the feed-drum D'. The mouths or discharge ends of these air-passages k^3 k^3 are preferably made long and narrow, the line of elongation being parallel to the plane of the feed-drum periphery and of a length nearly equal to the width of the throats or passages k^2 k^2. Hollow boxes K^2 K^2 are fastened to the outer sides of the angle-plates C C, with their interiors in communication with the respective air-passages k^3 k^3 and with the interiors of pipes k^4 k^4, which are connected with a pipe k^5 containing air under pressure from any suitable source or any air-compressing device, one form of which is indicated in a conventional way at k^6 in Fig. 1.

From a point just beyond the front of the hopper B the upright sides A A of the casing are provided with the guides L L, which being curved for a distance concentrically with the feed-drum project inward from the casing sides, so as to overlap the ends of any splints which are carried from the hopper by the feed-drum and extend beyond the sides of the latter, as indicated in Fig. 3. Where the feed-drum approaches the rotary transfer de-

vice these guides are curved outward, as shown in Fig. 2, so as to leave the splints free to be shifted from the pockets of the feed-drum to those of the transfer device. This shifting is assured by stripper-guides, one of which is shown in Fig. 2 at L′, fastened to the ribs or plates K′ K′ on opposite sides of the feed-drum and extending downward and outward past the outer periphery of the drum, so as to engage the projecting ends of any splints carried by the drum-pockets and cause them to move over toward the rotary transfer device E^2 as the drum revolves in the manner set forth in the patent before referred to.

To keep any splints which may be taken into the pockets of the feed-drum and carried out thereby from the hopper from longitudinal or endwise movement in the drum-pockets, I provide the under sides of guides L L with the ribs *l l*, standing just outside of the paths of the opposite ends of the splints as they are moved along by the drum. (See Fig. 3.)

While I prefer to have the feed-drum of my splint-feeding mechanism constructed as shown in Figs. 1, 2, 3, 6, 7, and 8—that is, with its pockets having elongated openings in their bottoms extending between the side plates or disks of the drum—I do not limit myself to such construction, but contemplate using instead, when desired, the form of feed-drum shown in Figs. 4 and 5, having the pockets with their bottoms between the drum sides each provided with a series of openings d^5 d^5, communicating with the interior of the drum.

The operation of my feeding mechanism, constructed as hereinbefore described and shown in the drawings, is briefly as follows: With the hopper supplied with splints, the feed-drum rotating, and the clearer-plates F^2 F^2 and swinging hopper-back actuated as and by the means hereinbefore set forth the mass of splints in the hopper will be jarred by the swinging back, so as to be caused to settle down in the hopper and to take positions parallel to each other and to the pockets of the feed-drum, so that the splints in the lowest layer in the hopper will be in position to drop into any unfilled drum-pockets that may be brought under them by the rotation of the feed-drum. Any splints falling into the drum-pockets will be carried onward out of the hopper past the clearer-plates F^2 F^2, which will kick back and keep away from the exit-opening in the hopper any unseated splints just above the drum periphery. The contact of the drum periphery with the lower portion of the mass of splints in the hopper causes those which may not be seated in the pockets of the drum to be moved gradually forward against and under the fluted roller I, which by its weight and by the engagement of its flutes with the splints assists in straightening out into parallelism with the other splints and the drum-pockets any splints which may be lying crooked in the hopper or at an angle to the lines of the drum-pockets. As the lowermost unseated splints are forced along by the action of the feed-drum the fluted roller I rises, if necessary, to let them pass and rotates slowly. The unseated splints after they pass the fluted roller, being assisted by the inward and upward swing of the clearer-plates F^2 F^2, work gradually upward and pass, without danger of clogging, up past the hopper-front and slowly travel over above the roller I back to the rear of the hopper again. The striking of the plates F^2 F^2 in pairs against the mass of splints not only jars the mass, but also helps to straighten the splints into parallelism with each other. Owing to the lightness of match-splints and the frequent presence on the splint sides of roughness, splinters, and raised fibers, it has been found that it will not do to rely upon the gravity alone of the splints to cause them to drop into the feed-drum pockets that may come below them in the hopper. While the alternate packing together and loosening of the splints caused by the swinging of the hopper-back facilitates the dropping of the splints into the drum-pockets because of their own weight, it does not insure such dropping by gravity, as the splints are not heavy enough to overcome even a slight resistance to their falling, which may be due to friction against the adjoining splints not over the drum-pockets, but resting upon the tops of the ribs between such pockets, or to fibers or splinters on such adjoining splints or the ones which are over the pockets. To insure the descent of the lowest splints in the hopper into any empty feed-drum pockets which may by the rotation of the drum be brought under such splints, I have found it to be greatly advantageous to use a blast or blasts of air under pressure.

In my feed mechanism set forth herein I cause a blast of air to be directed through each of the passages k^3 k^3 downward and inward at an angle into the lower portion of the mass of splints over the throats k^2 k^2. These blasts of air entering the opposite sides of the mass pass downward toward and through throats k^2 k^2, so that in their passage they press the splints downward toward the pocketed periphery of the feed-drum, the result being that when any splint subjected to the pressure of the air comes into position directly over the feed-drum periphery and below the passages k^3 k^3 it will when an unfilled drum-pocket comes under it be forced by the action of the air down into such pocket in spite of friction between it and the neighboring splints or the presence of such loose fibers or fine splinters as are likely to exist upon the splints. Some of the air will also pass downward through the open bottoms of the feed-drum pockets or through the openings in the pocket-bottoms, according as one form of feed-drum or the other is used, and will act upon the bodies of the splints to force them toward and into the drum-pockets. The injection of air into the lower portion of the mass of splints is also of advantage in

loosening up the splints just above the lowest layer in the hopper and so facilitating their proper descent within the hopper without undesirable continued packing or jamming. When the hopper-back swings outward, the air-blast will obviously assist in the quick loosening and slight separation of the splints in the lower part of the hopper. The air-blast as used by me also performs another useful function which goes to make the action of feeding of the splints regular and uniform, for it will force out from among the whole splints any dust, pieces of splints, or chips which otherwise might collect in the lower part of the hopper and so interfere with the entrance of the good splints into the feed-drum pockets. With either form of feed-drum it will blow out chips, dust, and pieces of splints from the hopper-bottom through throats k^2 k^2, while with the form of drum shown in Figs. 1, 2, 3, 6, 7, and 8 it will force any dust, splinters, or broken splints which may come over or tend to lodge in the drum-pockets down through the open bottoms of such pockets or through the large openings in the feed-drum periphery into the interior of the drum, from which such dust, splinters, or broken splints will be carried out either through the side openings d^2 d^2 in the drum or through the pockets or the large openings d^3 d^3 which may at any time be upon the under side of the drum. The guides L L, overlapping portions of the splints in the pockets of the feed-drum beyond the hopper-front, serve to prevent such splints from being forced outward by any pressure of air within the feed-drum until the splints reach the point where they are to be shifted to the transfer device E.

Either of the large openings d^3 d^3 in the feed-drum will allow even a whole splint, if lying crooked, to pass down out of the hopper, so that it cannot interfere with the seating of the other properly-situated splints, and both the air-blast and the heavy fluted roller I will act to aid or insure the exit from the hopper into the feed-drum of such a splint, which if it remained would be most troublesome in preventing the seating of splints in the drum-pockets.

The lid G, which covers the forward portion of the top of the hopper B, is to prevent any splints, when the hopper is kept filled, from working up and out over the sides of the hopper as the mass of splints is caused to rotate or work upward in the front of the hopper and over toward the back in the manner and by the means hereinbefore described.

With the compressed air forced into the hopper, as shown and described, the splints in the lower part of the hopper will be under pressure, tending to force them downward toward and into the feed-drum pockets, the upward pressure of the air being overcome by the mass of splints above the points of entrance of the air.

If it should be desired to have a greater pressure acting upon the lower splints than would be overcome by the mass of splints above where the air enters, the top of the hopper can be entirely closed by extending the lid G, as indicated by dotted lines in Figs. 1 and 6.

Having thus described my invention, what I claim is—

1. In a machine for feeding splints and the like, in combination with a hopper and a traveling pocketed feeder narrower than the opening of the hopper, and taking directly from the latter, means for injecting a continuous current of air, under pressure greater than that of the atmosphere, into the hopper at a point below the top of the mass of splints therein, and in such relation to the feeder, as to force the splints in the lower part of the hopper toward the pockets of the feeder, substantially as and for the purpose specified.

2. In a machine for feeding splints and the like, in combination with a hopper, a traveling pocketed feeder, narrower than the hopper interior, passing through the hopper, so as to be in contact with and support the mass of splints or the like therein, and means for injecting air under pressure greater than that of the atmosphere into the hopper at a point where it will engage the splints in the lower part of the mass in the hopper, substantially as and for the purpose shown.

3. In a machine for feeding splints and the like, in combination with a hopper, a traveling pocketed feeder moving past the open lower part of the hopper, so as to be in contact with and support the mass of splints or the like therein, and having one or more openings through the bottom of each of its pockets, and means for injecting air under pressure greater than that of the atmosphere into the hopper at a point where it will engage the splints in the lower part of the hopper near the traveling pocketed feeder, substantially as and for the purpose set forth.

4. In a machine for feeding splints and the like, in combination with a hopper, a traveling pocketed feeder moving past an opening in the hopper, so as to be in contact with and serve as a support for the mass of splints or the like therein, and having in the bottoms of its pockets elongated openings, and means for injecting air under pressure greater than that of the atmosphere into the interior of the hopper, so that it will directly engage the splints in the hopper near the traveling pocketed feeder, substantially as and for the purpose described.

5. In a machine for feeding splints and the like, in combination with a hopper, a traveling feeder having a pocketed surface moving past an opening in the hopper, so as to be in contact with the splints in such opening, one or more openings in the bottoms of the pockets, and large openings beyond the pockets, and means for injecting air under pressure into the hopper, substantially as and for the purpose specified.

6. In a machine for feeding splints and the like, in combination with a hopper, a traveling feeder having a pocketed surface of a width less than that of the hopper and than the length of the splints or the like to be fed, passing an opening in the hopper, so as to be in contact with the splints or the like therein, and means for injecting air under pressure into the hopper on opposite sides of the latter, substantially as and for the purpose shown.

7. In a machine for feeding splints and the like, in combination with a hopper, a traveling feeder having a pocketed surface moving past an opening in the hopper, through which the splints or the like can fall down upon the pocketed surface of the feeder, such surface being narrower than such opening, and means for injecting air under pressure into the hopper on opposite sides thereof at points near the hopper-opening, substantially as and for the purpose set forth.

8. In a machine for feeding splints and the like, in combination with a hopper, a traveling feeder having a pocketed surface moving past an opening in the hopper and made narrower than such opening, a source of supply of air under pressure, and means for directing such air into the hopper on opposite sides thereof, at points near the hopper-opening, and in an inward and downward direction, with reference to such opening, substantially as and for the purpose described.

9. In a machine for feeding splints and the like, in combination with a hopper provided with an opening and with air-passages extending into its interior on opposite sides near the hopper-opening, such passages being adapted to direct the air at an angle downward and inward, with reference to the hopper-opening, a source of supply of compressed air connected with the air-passages, and a traveling feeder having a pocketed surface moving past the hopper-opening, made narrower than such opening, and arranged to allow the air in the hopper to pass outward between its opposite sides, and the sides of the hopper-opening, substantially as and for the purpose specified.

10. In a machine for feeding splints and the like, in combination with a hopper having an opening, a rotary drum with pocketed periphery moving past the hopper-opening and made narrower than such opening, a casing on opposite sides of the drum, at a distance therefrom, ribs on such casing extending inward to the sides of the drum and arranged to leave an open throat on each side of the drum, opposite the opening in the hopper, and means for injecting air under pressure into the hopper, substantially as and for the purpose shown.

11. In a machine for feeding splints and the like, in combination with a hopper having an opening, a rotary feed-drum with pocketed periphery moving past such opening and made narrower than the latter, a casing having uprights on opposite sides of the feed-drum, provided with ribs extending inward to the sides of the drum, except for a distance directly below the opening in the hopper, where the ribs are arranged to leave a throat or passage downward between the drum and casing sides, and means for injecting air under pressure into the hopper, substantially as and for the purpose set forth.

12. In a machine for feeding splints and the like, in combination with a hopper having an opening, a rotary feed-drum having a pocketed periphery, narrower than such opening, a casing extending up on opposite sides of the drum, having, on each side of the drum, a rib or plate extending inward to the drum side, and running, from a point to the rear of the hopper, to a point below the hopper-opening, where it is provided with an upwardly-extending part, and another similar rib or plate, beginning at a point below the hopper-opening, where it is provided with an upward projection, and running forward to a point beyond the hopper, a source of supply of air under pressure, and means for directing such air into the hopper at points near the opening therein, substantially as and for the purpose described.

13. In a machine for feeding splints and the like, in combination with the hopper having an opening, and the two air-passages, on opposite sides, extending inward and downward, with reference to the hopper-opening, a source of supply of air under pressure, connected with such passages, a rotary feed-drum having a pocketed periphery moving past such opening and made narrower than the latter, substantially as and for the purpose specified.

14. In a machine for feeding splints and the like, in combination with the hopper having an opening, and the two air-passages, on opposite sides, extending inward and downward, with reference to the hopper-opening, a source of supply of air under pressure, connected with such passages, a hollow rotary feed-drum having a pocketed periphery moving past such opening and made narrower than the latter, and having the bottoms of its pockets provided with one or more openings, communicating with the interior of the drum, substantially as and for the purpose shown.

15. In a machine for feeding splints and the like, in combination with a hopper having an opening, and means for injecting air under pressure into the hopper, a hollow rotary feed-drum made narrower than the hopper-opening, revolving in contact with the mass of splints in the hopper and having, in its periphery, pockets with elongated openings in their bottoms, made wide enough to permit the passage of pieces of splints or broken splints, substantially as and for the purpose set forth.

16. In a machine for feeding splints and the like, in combination with a hopper having an opening, and means for injecting air under

pressure into the hopper, a hollow rotary feed-drum moving past the hopper-opening, so as to form a support for the splints or the like in the hopper, and having its periphery provided with one or more series of pockets, each having a bottom arranged to support a splint or the like at points near its end, and made open between such points, and one or more large openings beyond the pockets, communicating with the interior of the drum, substantially as and for the purpose described.

17. In a machine for feeding splints and the like, in combination with a hopper and a traveling feeder having a pocketed surface moving past an opening in the hopper, so as to engage and form a support for a portion of the mass of splints in the hopper, a heavy freely-turning roller in the hopper, made capable of rising-and-falling movement with reference to the feeder, and means for injecting air under pressure into the lower part of the hopper, substantially as and for the purpose specified.

18. In a machine for feeding splints and the like, in combination with a hopper, a traveling feeder having a pocketed surface moving below an opening in the hopper so that the mass of splints in the hopper rests upon it and having elongated openings in the bottom of its pockets, adapted to allow the passage of broken pieces of splints and a heavy fluted freely-turning roller within the hopper above the feeder made capable of yielding freely upward away from such feeder, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of March, 1897.

JACOB PULVER WRIGHT.

Witnesses:

LYMAN A. BEECHER,

H. DAYTON STANNARD.