

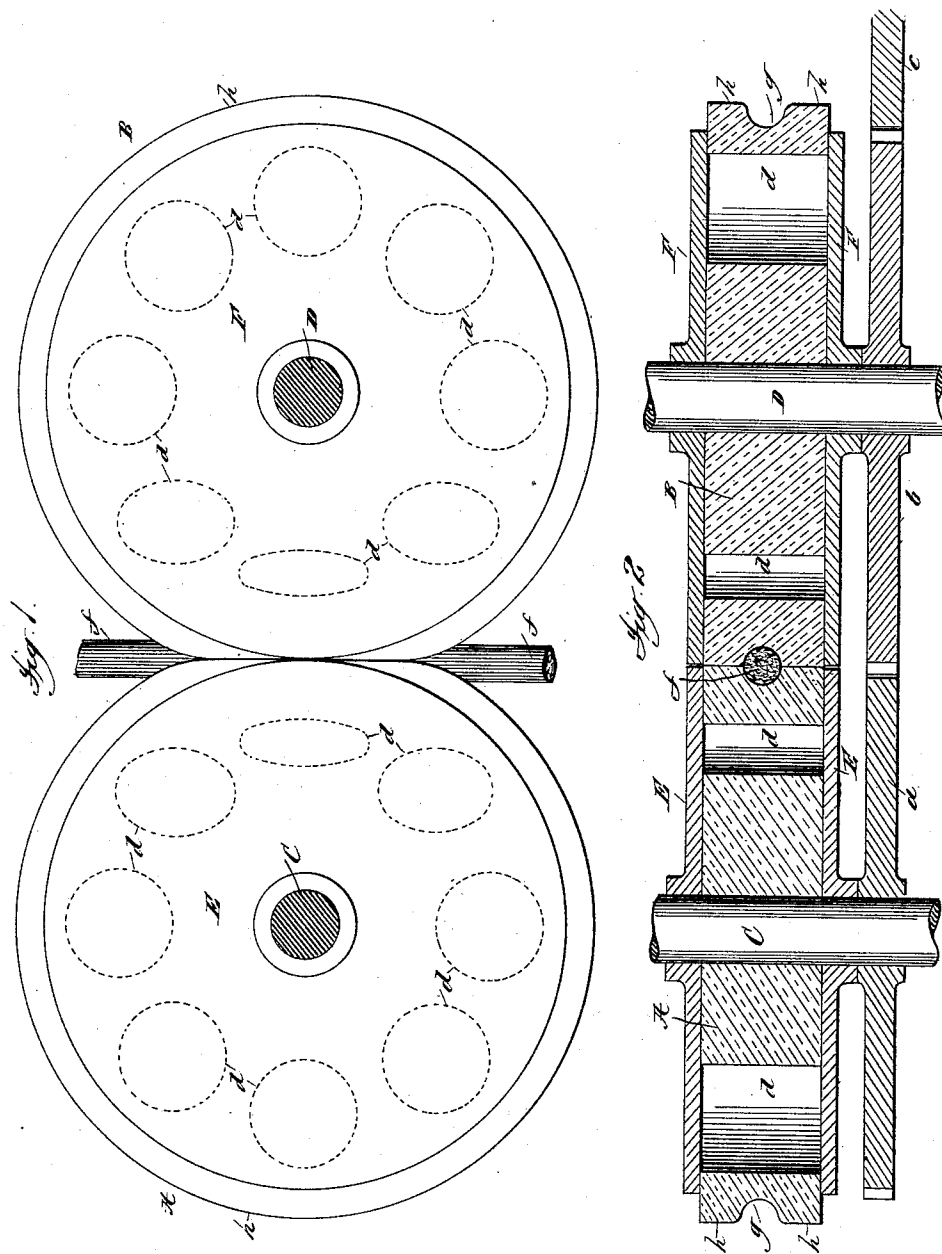
(No Model.)

2 Sheets—Sheet 1.

F. S. KINNEY.
CIGARETTE FEEDING DEVICE.

No. 437,208.

Patented Sept. 30, 1890.



Attest:
Geo. A. Bitts.
J. M. Borst.

Inventor:
Francis S. Kinney
by Philip Phelps Hoovey
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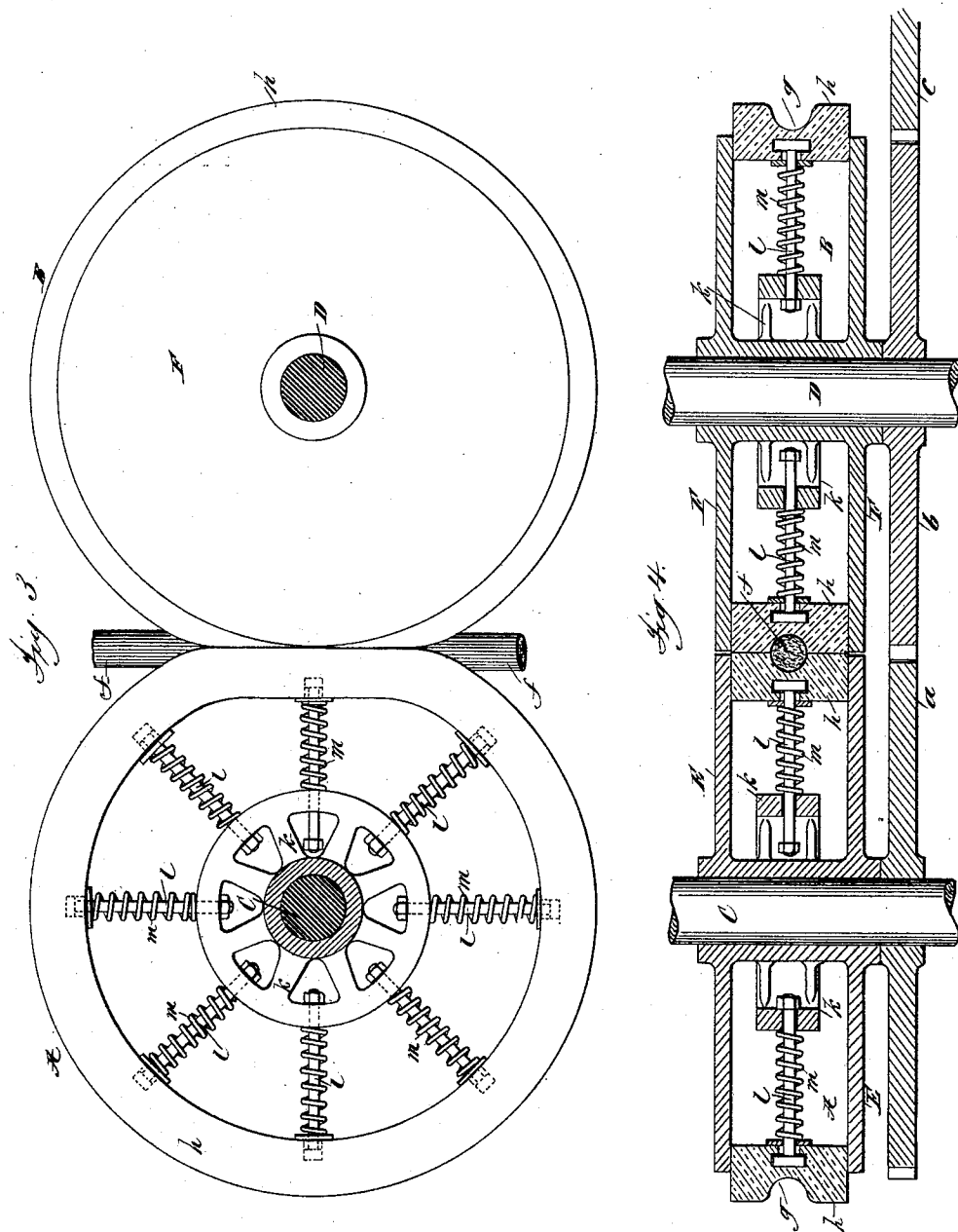
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UNITED STATES PATENT OFFICE.

FRANCIS S. KINNEY, OF PEQUANAC, ASSIGNOR TO THE AMERICAN TOBACCO COMPANY, OF NEWARK, NEW JERSEY.

CIGARETTE-FEEDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 437,208, dated September 30, 1890.

Application filed May 21, 1888. Serial No. 274,512. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS S. KINNEY, a citizen of the United States, residing at Pequananac, county of Morris and State of New Jersey, have invented certain new and useful Improvements in Cigarette-Feeding Devices, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to a feeding mechanism, which, although applicable to many uses, is especially adapted for use in operation upon fragile or comparatively fragile materials and in those cases where it is desired to subject the material operated upon to only light or comparatively light pressure.

One important application of the invention is found in the manufacture of cigarettes where it is desired to advance the continuous tube after it has been filled with the tobacco and before it has been severed into short lengths to form the cigarettes.

The invention, broadly considered, consists of a pair of yielding elastic feeding wheels or disks between which the material to be advanced is grasped, and which are set with their axes at such a distance from each other that at the point where the two disks are in nipping contact they are considerably flattened by contact with each other, and thereby secure a hold upon the material for a considerable distance. By reason of the long hold thus obtained upon the material the friction upon the material is increased to such an extent that only a slight pressure upon the material is required to secure the necessary feeding action, and thus danger of crushing or distorting the material, if it is of a fragile nature, is avoided.

A full understanding of the invention can be best given by an illustration and a detailed description of the mechanism embodying the same, and all further preliminary description will therefore be omitted and a full description given, reference being had to the accompanying drawings, in which—

Figures 1 and 2 are respectively a plan view and a central section of one form of mechanism embodying the invention. Figs. 3 and 4 show another form of mechanism embodying the invention.

Referring now particularly to Figs. 1 and 2, it is to be understood that the feeding mechanism as therein shown consists, primarily, of two wheels or disks A B, which are made of yielding elastic material—such, for example, as soft rubber. These disks are mounted upon shafts C D, which are driven in any suitable manner—as, for example, by engaging-gears *a b*, which receive motion from a gear *c*, which is driven from any convenient source of power. The shafts C D are set at such a distance apart that the peripheries of the two disks are considerably flattened by contact with each other at the point where they come into engagement, thus causing the two disks to have a nipping contact of considerable extent, which contact will, owing to the yielding and elastic nature of the disks, be continually preserved as the disks are revolved.

In order to cause the disks to yield readily and uniformly and without becoming distorted to any considerable extent, except at the immediate point of contact, they are preferably provided with openings *d*, which are suitably distributed around the disks to secure the proper yield and elasticity.

When the disks are made of rubber, which is quite soft and yielding, the portions of their edges which are flattened by contact with each other will also have a tendency to spread vertically and become thickened at that point. To prevent this any suitable means may be employed for confining the disks and preventing them from spreading at their edges. For example, the shafts C D may be provided with rigid disks E F, located upon and held against the opposite sides of the disks A B in such a manner as to prevent this tendency to spread, the disks E F being of less diameter than the disks A B, so that their peripheries just meet at the point of contact between the disks A B, as shown in Fig. 1.

The feeding apparatus herein illustrated is designed to operate upon a body which is round in cross-section—such, for example, as a continuous tube *f*, filled with tobacco and adapted to be subsequently severed into short lengths to form cigarettes. To adapt the apparatus for this use the disks A B are

provided around their peripheries with semi-circular grooves *g*, which register with each other as the disks revolve, and thus form a circular opening between the disks of sufficient size to receive the tube and permit it to pass between the disks without being subjected to more than sufficient pressure to cause it to be properly advanced. The long bearing or contact which the disks have upon the tube causes such an amount of friction that the pressure required upon the tube is very slight, and thus danger of breaking the wrapper, which is very fragile, or crushing or flattening the tube is avoided. The broad flanges *h* at the sides of the grooves, which come together as the disks are revolved, form bearings and receive the main part of the pressure due to the elasticity of the material as the disks are flattened, and thus relieve the tube and tobacco *f* or other material acted upon from that pressure. If the body *f* which is to be acted upon is of other form than round in cross-section, the form of the grooves *g* will be correspondingly changed.

The construction which has been described embodies the invention in one of its simplest forms; but the construction may be varied considerably without departing from the principle of the invention. One of the changes which may be readily made is illustrated in Figs. 3 and 4. In this case the disks A B are of annular form, the central portions being removed, so as to reduce them to rings. These flexible elastic rings are connected to and rotated from hubs *k* upon the shafts C D by means of radial rods or spokes *l*, which are fast to the rings, but have a limited inward movement in openings in the hubs. The spokes *l* are provided with springs *m*, the tendency of which is to press the rings outward in all directions from the hubs, but which are so adjusted in tension that they will successively yield as the disks are revolved and allow the portions of the disks which come into contact with each other to flatten the same, as in the construction first described.

The annular disks or rings A B, as shown in Figs. 3 and 4, are made of the same mate-

rial (preferably soft rubber) as that employed for the disks shown in Figs. 1 and 2; but when the annular form of the disks is adopted they may in some cases be made of other material, and if made sufficiently light may be made of spring metal.

The feeding-disks constructed as has been described provide a feeding mechanism which is very simple in its construction and operation, and which has by reason of the extended grip or hold it has upon the material some of the characteristics of a belt-feed, but which has advantages over a belt-feed in that it is much more positive in its action.

What I claim is—

1. The herein-described feeding mechanism, consisting of two yielding elastic wheels or disks A B, revolving in contact and provided with circumferential grooves which register as the disks revolve, said wheels or disks having their axes at such a distance from each other that the flanges are flattened at their point of nipping contact, substantially as described.

2. The combination, with the flexible elastic feeding disk or wheels A B, provided with circumferential grooves *g*, which register as the disks revolve, and having their axes at such a distance from each other that the flanges of the disks are flattened at their point of nipping contact, of rigid plates at opposite sides of the disks to prevent them from spreading as they are flattened, substantially as described.

3. The herein-described feeding mechanism, consisting of two yielding elastic disks or wheels A B, provided with openings *d*, extending the full width of the disks, said disks or wheels revolving with their peripheries in contact, and having their axes at such a distance from each other that the disks are flattened at their point of nipping contact, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANCIS S: KINNEY.

Witnesses:

J. J. KENNEDY,
G. M. BORST.