	Tercios.	
Vuelta Abajo and semi Vuelta Abajo ..	150,000 to	200,000
Parlida	30,000	50,000
Remedios	60,000	85,000
Cuba and Java	25,000	35,000
Gibara	20,000	30,000
Total	285,000	400,000

(One tercio about 124 lb.)

"As is well known, that grown in the Vuelta Abajo or district west of Havana is the best kind, and has given Cuba its well-earned reputation. About 67,000 acres are cultivated under the denomination.

"I have no reliable statistics to show how much of the raw produce is manufactured in the island, probably not more than one-fourth. Very large quantities of the leaf are exported in bales and rolled abroad.

"It is evident, however, that, given the total production and corresponding result in the manufactured form, but a small portion of the cigars sold in Europe and elsewhere as Havana cigars have the slightest claim to a connection with Cuba.

"The chief and only important manufactories of these cigars are in Havana, and much care and money is expended in producing a handsome-looking article. As much as 40 dollars gold are paid to skilled labourers per 1000 for making up first-class goods. About 17,000 operatives are employed in this manufacture in Havana alone. One of the largest establishments here is that supplying the Henry Clay brands, which is stated to turn out from 80,000 to 120,000 cigars daily; and there are many others

of considerable importance with a well-earned and old-established reputation for fine goods.

"The quality of tobacco, like other agricultural produce, depends on seasons, soil, and many natural causes, which may baffle the most careful cultivator.

"There are good and bad years; abundant and scanty crops in succession.

"Except in the case of the few rich owners of plantations in the best districts, brands and names are no guarantees for a permanently good article. Even these favoured few are exposed to bad seasons, if in a minor degree than less fortunate holders.

"There has been no really fine-flavoured aromatic leaf harvested since 1881. Much of that since garnered has been simply bad.

"Great hopes are entertained of the coming 1885 crop, and present indications are in favour of this assumption.

"The manner in which the wholesale trade is carried on in Havana is incomprehensible to an ordinary outsider, to whom it would appear that the manufacturers prefer a prospective loss abroad to a present and certain gain here. They will only execute orders, large or small, for cash over the counter, giving no, or in some cases the smallest, discount. No manufactured goods are kept in stock, but are made to order after sample, and, unless examined in warehouse before delivery, and that means little, must be paid in full on delivery, and the consequence but too frequently is that, on arrival at their destination, they do not correspond with the sample, and the deluded buyer finds that he has made a bad bargain, and (if an Englishman) discovers that he could have bought the same article

cheaper in the English market with the additional advantage of examining and testing the goods before purchase.

"I leave the solution of this enigma to the initiated: it probably is that the makers consign very largely, and London importers are too experienced and too wary to pay the full invoice price until well acquainted with the wares, or they get large discounts refused to the cash purchaser in Havana.

"Complaints are heard of the depressed state of the Cuban tobacco trade and of the large unsold stocks on hand. I do not think the traders deserve sympathy, nor have they done anything to earn the confidence of foreign customers. My experience leads me to advise intending purchasers to put (I do not advise regular traders) themselves in the hands of reliable London dealers and avoid all direct purchases.

"Intelligent smokers with sensitive palates will find no cheap tobacco here fit to smoke; 50*s*. per 100 and upwards is what must be paid at present for really fine-flavoured aromatic cigars; beyond 80*s*. or 85*s*. prices become fancy ones, and are paid for the smart cases and envelopes. Even at the rates I quote it is not easy to find what is wanted. There is abundance of dark powerful tobacco of fine quality at much lower rates, but not light tobacco with flavour or aroma or without strength, such as the educated (I allude to taste) Englishman seeks. I believe that only about 10 per cent. of the tobacco harvested in ordinary years is of the light colour I refer to, hence the difficulty in supplying the demand, and the artifices resorted to to supply the deficiency.

"Cuba's annual tobacco crop may be estimated as between 300,000 and 400,000 *tercios* of 125 lb. each. About 30,000 persons are employed in its cultivation, and its value when harvested may be fixed (according to year's quality) at between 8,000,000 and 12,000,000 dol. of 4*s*.

"I cannot estimate the number of persons engaged in working plantation (Vegueros) and other cigars for home consumption, nor the quantity thus consumed; but the higher class of operatives employed in cigar-making for export number about 20,000, and turn out at present probably 200,000,000 cigars annually.

"The export trade has fallen off considerably of late years. In the five years, 1870 to 1874, about 350,000,000 cigars were annually shipped to foreign ports, whereas in the period between 1879 and 1884 the annual average export was only 200,000,000.

"Probably larger quantities have been exported in each period owing to under valuations to escape export duty; but relative bulk proportions between the two export periods will hardly be affected by this."

The exports from Havana in 1884 were 11,767,200 lb. to the United States, 613,000 to Spain, 252,600 to France, 37,500 to Mexico and South America, 70,000 to Belgium, and 500 to the Mediterranean.

CHAPTER V.

PREPARATION AND USE.

This chapter embraces the manufacture of cut, cake and roll tobacco, cigars, cigarettes, and snuff. It is impossible to indicate the precise form in which each kind of tobacco-leaf is manufactured for use; indeed, no well-defined line marks the qualifications of each sort, and the great art of the manufacturer is to combine the various growths in a manner to produce an article suited to the tastes of his customers, at a price suited to their pockets. But, in a general way, it may be said that Havana and Manilla are probably exclusively consumed in the form of cigars; Virginia is a favourite for cavendish, negrohead, and black twist, and is largely converted into returns, shag, and snuff; Kentucky, Missouri, and Ohio are used for cavendish, brown twist, bird's-eye, returns, and shag; Dutch and German make the commonest cigars, k'naster, moist snuffs, and smoking-mixtures; Java and Japan are selected for light cigars, mixtures, and light moist shag; Latakia, Turkey, Paraguay, Brazil, China, and the remainder, are used up in cigarettes, mixtures, imitations, and substitutes.

Damping.—The tobacco-leaves are received by the manufacturer in all kinds of packages, from a hogshead to a seron (raw hide), and of all weights from 1 to 12 cwt. The first process they undergo is "damping,' which is necessary to overcome their brittleness, and

admit of their manipulation without breaking. For this purpose, the bunches ("hands") are separated, and the leaves are scattered loosely upon a portion of the floor of the factory, recessed to retain the moisture. A quantity of water, which has been accurately proportioned to the absorbing qualities of the leaf used, and to the weight present, is applied through a fine-rosed watering-pot, and the mass is left usually for about 24 hours, that damped on one morning being ready for working on the following morning. In England, water alone is admissible (by legislative enactment) for damping, except in special cases to be noted subsequently; but abroad, many "sauces" are in vogue, their chief ingredients being salt, sal ammoniac, and sugar.

Stripping and Sorting.—Quantities of leaf-tobacco are shipped in a condition deprived of their stem and midrib, and are then known as "stripts." Those which are not received in this state, after having been damped, are passed through the hands of workmen, who fold each leaf edge to edge, and rip out the midrib by a deft twirl of the fingers, classifying the two halves of each leaf, and ranging the sorts in separate piles as smooth as possible. The value of the leaf greatly depends upon the dexterity with which the stripping is done, as the slightest tear deteriorates it. Stripts require sorting only. The largest and strongest leaves are selected for cutting and spinning; the best-shaped are reserved for the wrappers of cigars; broken and defective pieces form fillers for cigars; and the ribs are ground to make snuff. For the manufacture of "bird's-eye" smoking-tobacco, the leaves are used without being previously stripped.

Cutting.—Cutting is the process by which the damped leaves, whether stripped or not, are most extensively prepared for smoking in pipes and cigarettes. The tobacco-cutter which is in general use in this country is shown in Figs. 14 (side elevation), 15 (sectional elevation), 16 (front elevation), and 17 (plan). The main frames *a* are united by stretcher-bolts *b*; *d* is a wooden-surface feeding-roller, on which the tobacco is pressed and cut; *c* are the upper compressing- and feeding-rollers, mounted in *e*, carriage-plates extended backwards, forming the sides of the feeding-trough, and hinged to the axle *m*; *f* are levers; *g*, links by which the weight *w* presses down the upper rollers; *h*, a crank, and *i*, a connecting-link for working; *j*, the cross-head to which the knife *k* is fixed; *l*, side-levers or radius-bars for guiding the knife, hinged on the eccentric ends of the axle; *m*, an axle held in bearings at the back of the machine; on its middle part, which is concentric with its own bearings, are hinged the top roll carriage-plates *e*, whilst on its projecting ends, which are slightly eccentric, the knife-levers *l* are hinged; *n* is a worm-wheel segment; *o*, a worm; *p*, a hand-wheel for turning the eccentric spindle *m* through a part of a revolution in its bearings, for adjusting the contact of the knife with the nose-plate *q*; *r*, a worm; *s*, a worm-wheel; *t*, a worm-pinion for giving simultaneous movement to all the rollers; *u*, a spindle, "universal jointed" at both ends, for driving the upper rollers in positions varying with the thickness of the feed; *v*, a saw-toothed ratchet-wheel, moved intermittently by a catch *x*, link *y*, and stud-pin *z*, *v* being changeable, and the eccentricity of *z* variable, for the purpose of regu-

lating the fineness of the cutting. Both ends of the knife move at the same speed, and its surface is made to clear the work by describing a slight curve. The knife

FIG. 14.

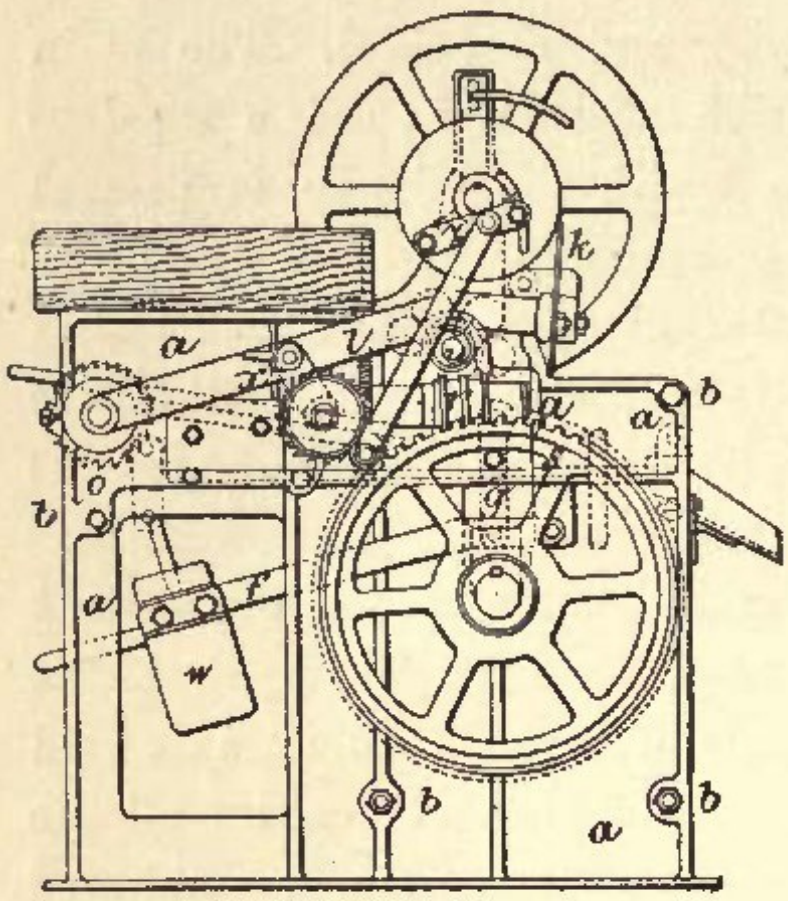
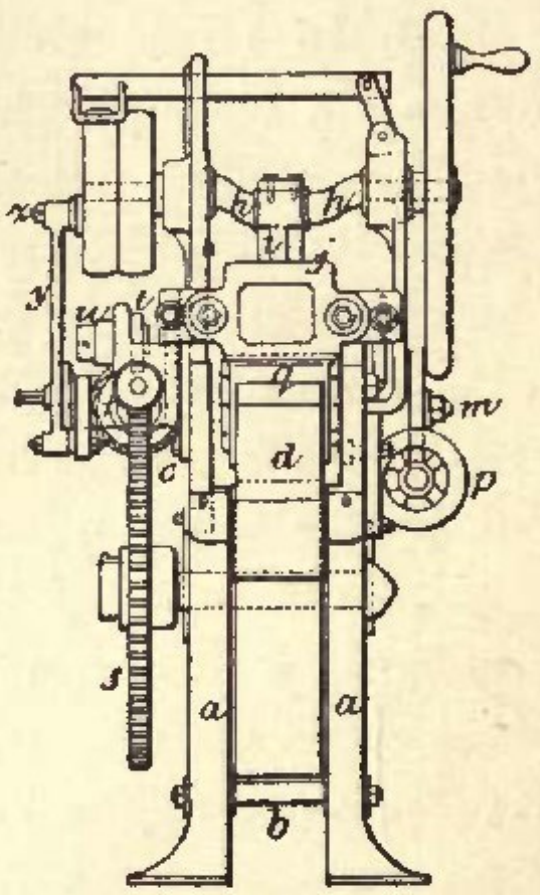


FIG. 16.



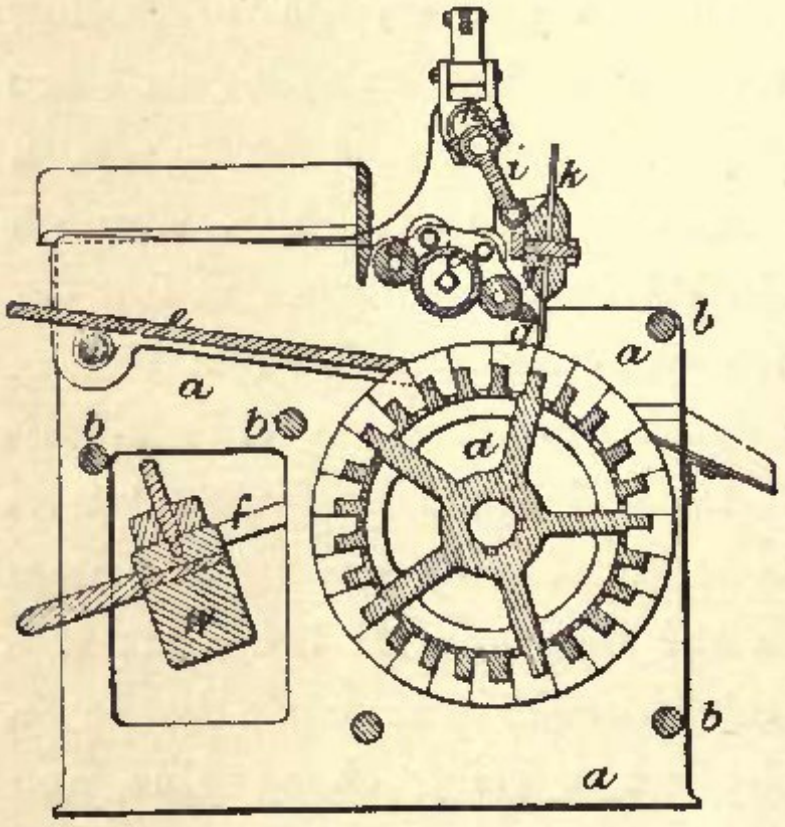


FIG. 15.

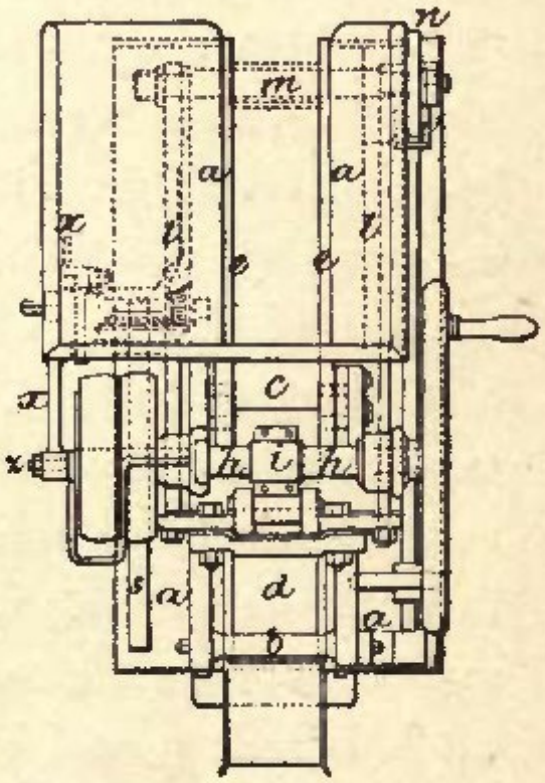


FIG. 17.

is adjusted accurately to the nose-plate, while the machine is in motion, by varying the direction of eccentricity of the axis of the knife-levers to that of the roller-levers. The fineness of the cutting is regulated by varying the eccentricity of a movable stud-pin in a plate on the crank-shaft which gives motion, through a train of speed-reducing gear, to the several rollers. The knives are easily removed and replaced, and require sharpening after every 4–6 hours' working. Two men attend the machine, one to keep the feed-rollers supplied, the other to watch that the knife is doing its work, and to remove the tobacco as fast as it is cut.

Drying.—The cut tobacco, as removed from the machine, is placed loosely in a layer several inches deep in a large trough, provided with a canvas false bottom; steam is introduced between the true and false bottoms, and finds its way up through the tobacco, which is thus rendered more easily workable. It is next transferred to a similar trough having no false bottom, but a steam-jacketed floor instead; here the tobacco is dry-heated, and at the same time lightened up by hand. Finally, it is taken to a third trough, where cold air is forced through the canvas false bottom, by means of a blower or fan. This last operation dries the tobacco ready for use in the course of some hours; but it has the disadvantage of dispersing part of the aroma, and is therefore generally resorted to only when time presses. In other cases, the drying is conducted on canvas trays. However performed, the drying operation needs the greatest attention, to prevent the moisture being extracted to such a degree as to destroy the profit which its presence confers upon the

manufacturer. With drying, the preparation of cut tobacco for smoking in pipes is completed.

Cake or Plug.—The manufacture of "cake" or "plug" is little carried on in this country, as the Excise laws exclude the use of sweetening matters, except when carried on in bond. The process is sufficiently simple. Virginian leaf, with or without the addition of flavourings, is sweated for a day or two, to deepen the colour, worked into a soft mass, and next placed in moulds, and subjected to sufficient pressure to ensure the cohesion of the mass. Each cake is then separately wrapped in perfect leaf, and passes through a series of moulds, each smaller than the last, and under increasing pressure in steam-jacketed cupboard-presses, of which there are many forms. The combined effect of the heat and pressure is to thoroughly impregnate the whole mass with the natural juices of the leaf and the flavouring (if any has been used), and to produce a rich dark colour.

A machine for turning out plug-tobacco in ribbons, made by the McGowan Pump Co., New York, is shown in Fig. 18. The tobacco is first weighed out in the proper quantities, and spread in a box placed in spaces in a heavy iron table *a*. When the latter is filled, it is passed to and fro under the heavy iron wheels *b*, which are loose on the shaft, and which can be adjusted to exert any desired pressure. Twice passing through suffices. The ribbon is made in lengths of 10 feet, and either $5\frac{3}{4}$ inches or $2\frac{7}{8}$ inches wide, as desired.

Roll or Twist.—Roll- or twist-tobacco is made by spinning the leaf into a rope, and then subjecting it to hot pressure. Until recently, the spinning was performed by

hand, much after the manner of ordinary rope-making by hand. But this slow process is now superseded by a

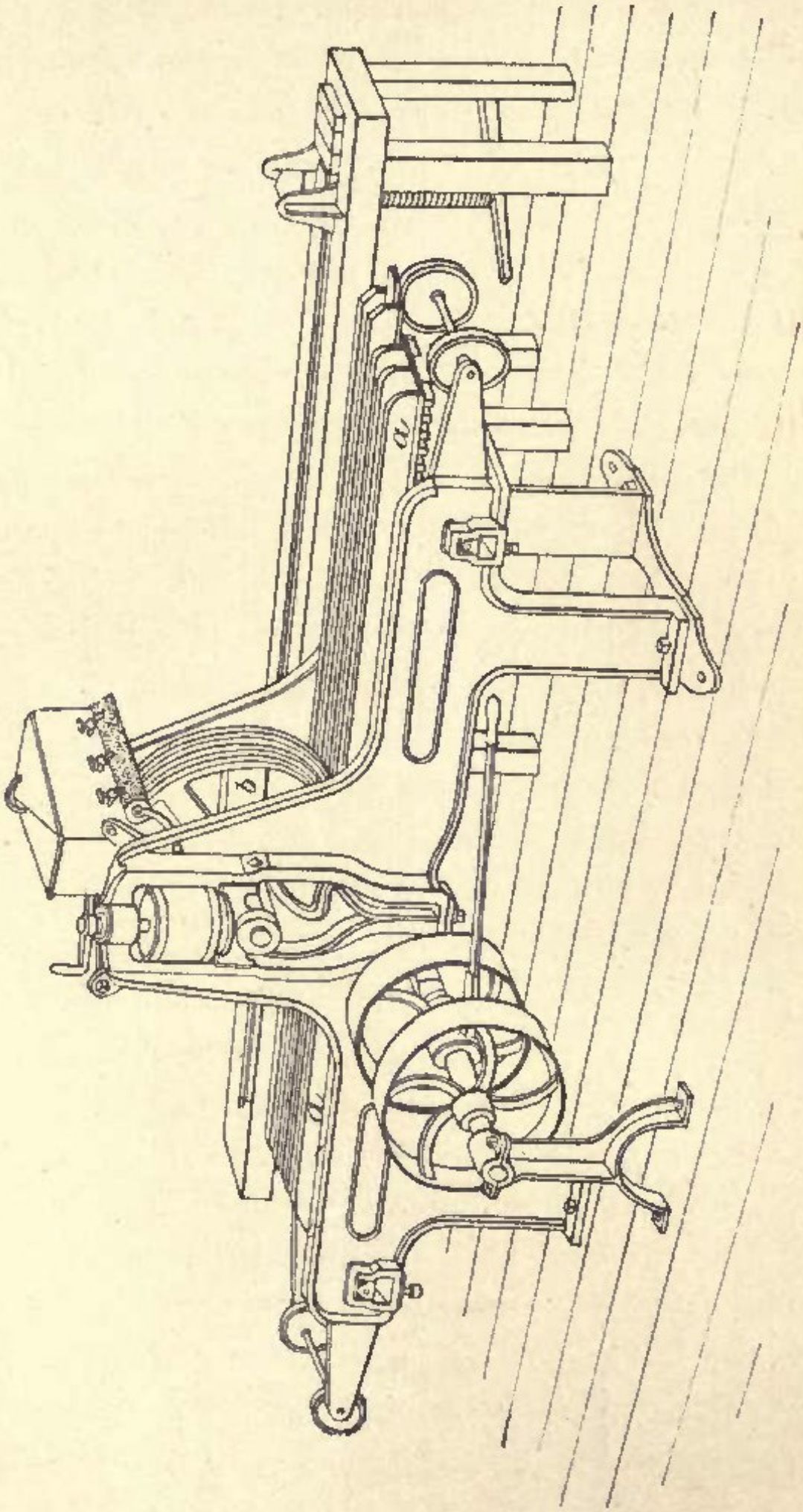


FIG. 18.

Fig. 19.

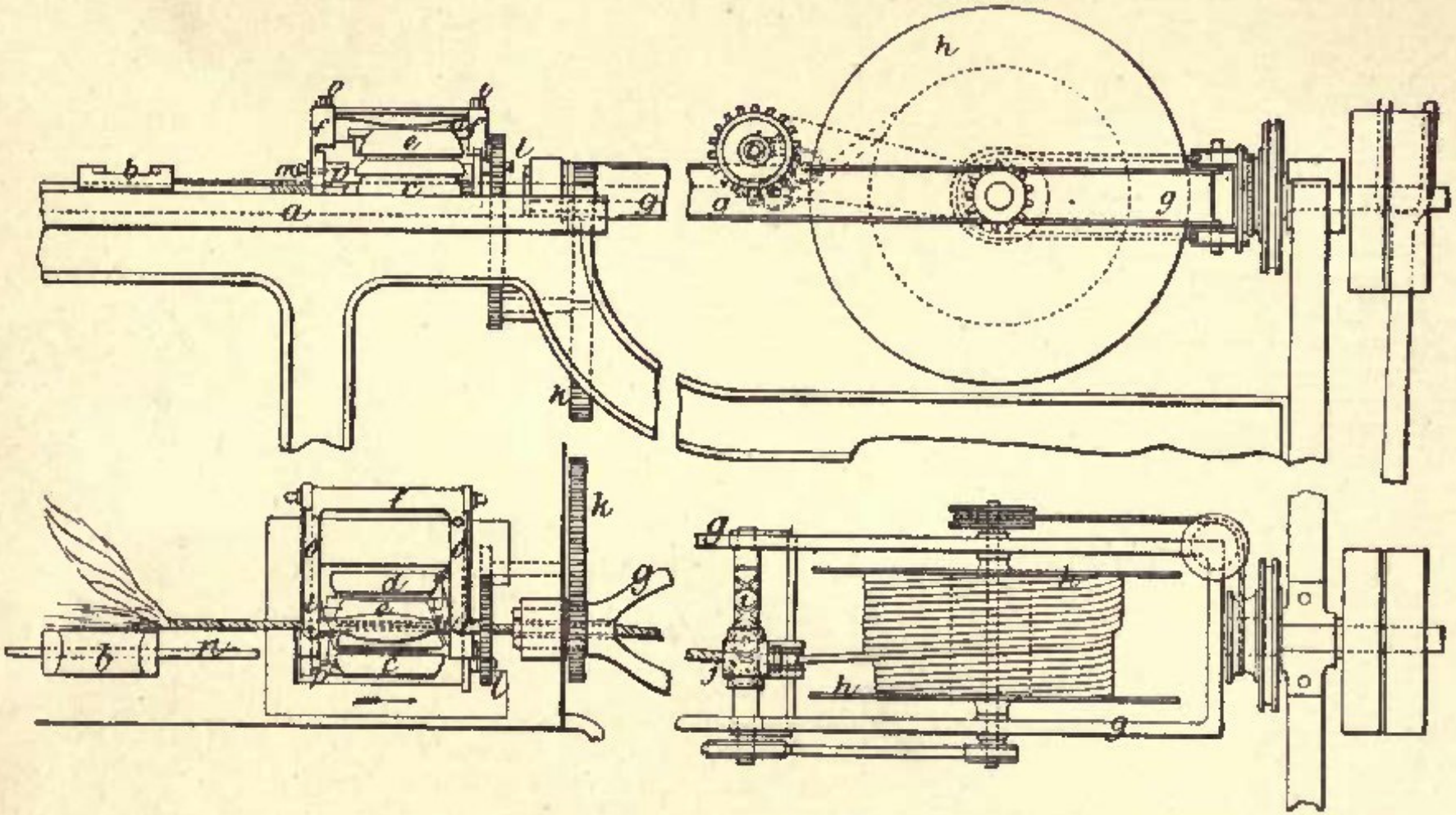
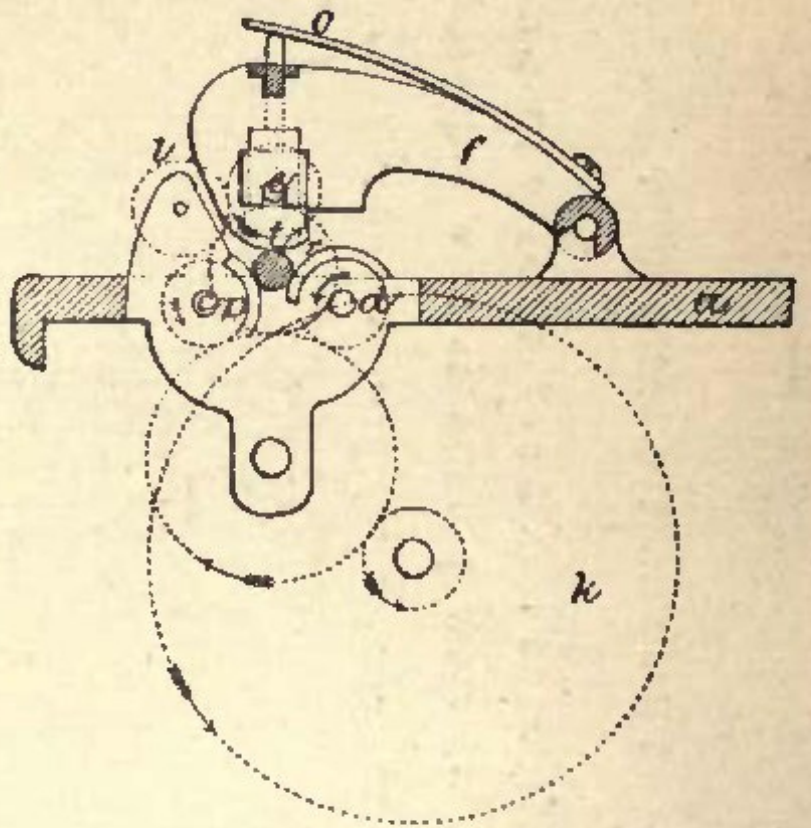


Fig. 20.

Fig. 21.



machine made by Robinson and Andrew, of Stockport; it is spoken of in very favourable terms by English manufacturers, and received a diploma of merit at the Philadelphia Exhibition. The machine consists of a combination of 3 rollers, whose surfaces are made of segments, to which lateral to-and-fro motions are given by cams attached to the stands on which the axles of the rollers rotate. The tobacco occupies the central space between the 3 rollers, and it is carried through the machine by the lateral to-and-fro motions given to the segments. The fillers and wrappers are laid on a table joined to the machine. The filler is placed in the cover, and they pass together between the rollers, whose action twists and compresses the tobacco into a roll; this is carried forward and wound on a bobbin, revolving in an open frame, and provided with a guide for equalizing the distribution of the tobacco.

The machine is shown in Figs. 19 (elevation), 20 (plan), and 21 (end view). The tobacco is laid on the table *a*, provided with a rib *n*, on which the sliding rest *b* is free to move to and fro; *c d* are the two lower segmental rollers, the axles of which revolve in stationary bearings; *e* is the top roller, the axle of which revolves in sliding bearings, fitting in the swing-frame *f*, and each acted upon by a spring *o*, pressing on a pin communicating with the bearing, and putting an elastic pressure on the tobacco.

Each segment-roller consists of an axle with four segments, best shown in Figs. 22 and 23. The outer shell of the segments is made of hard wood, fitting an inner shell of malleable cast-iron, the projections on

which suit grooves on the cast-iron axle. The segments of the rollers *c d* are moved laterally to and fro by the wedge-shaped cams *p q r s*, fixed to the bearings of the

FIG. 22.

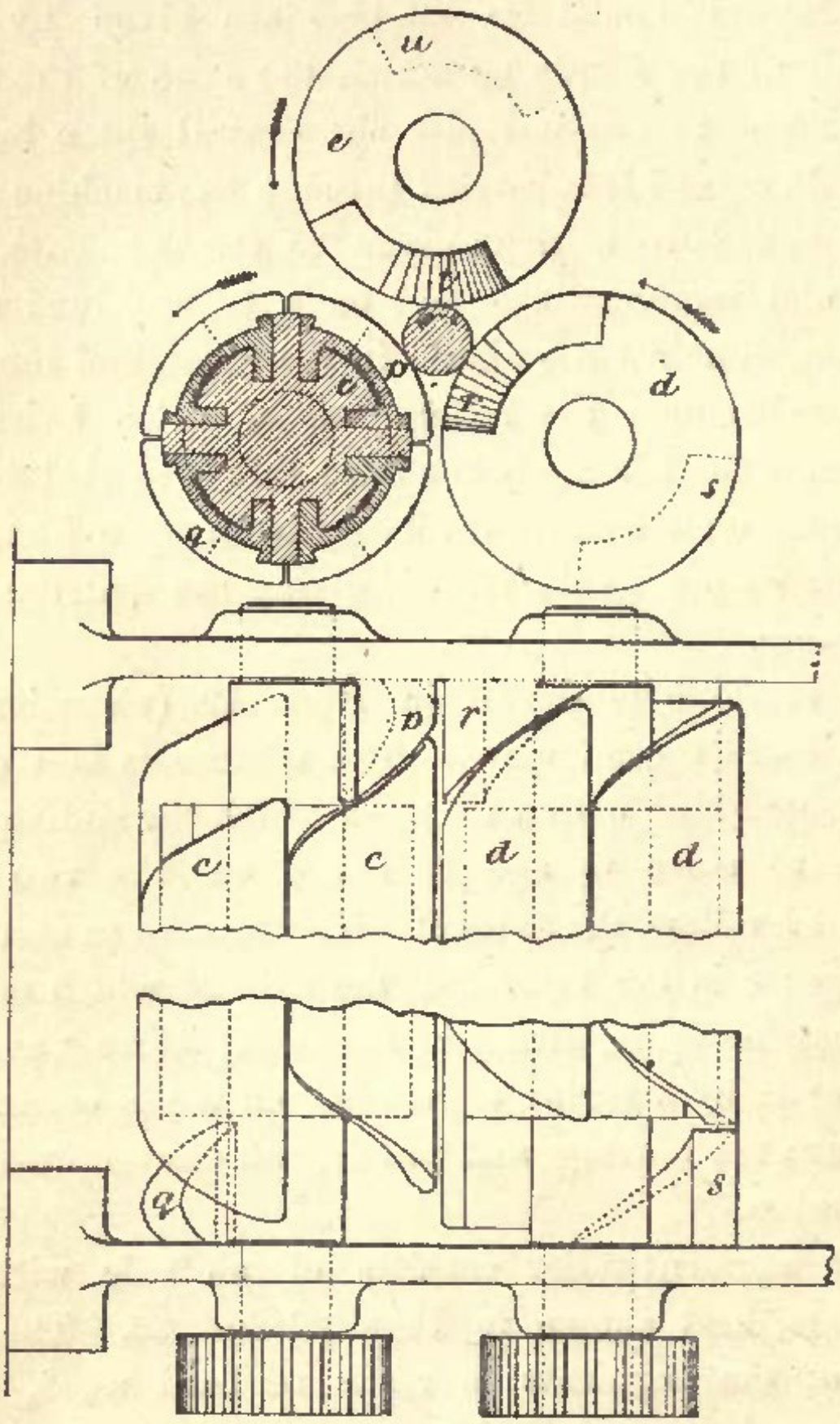


FIG. 23.

roller-axles; and the segments of the roller *e* are moved in the same manner by cams *t u*, fixed to the swing-frame *f*. The tobacco occupies the central space between the 3 rollers, and the cams *p r t* move the segments in the direction of the arrow where they touch the tobacco, while the cams *q s u* move them back. After the tobacco has passed beyond the segment-rollers, it goes through the hollow trunnion of the open frame *g*, in which the bobbin *h* revolves; the other trunnion of the frame *g* is provided with fast and loose pulleys, by which the whole machine is driven. To this trunnion, are also fixed an ordinary friction-break pulley, and a grooved pulley, around which latter passes a band for driving the pulley on the axle of the bobbin *h*. To the other end of the axle of the bobbin, is fixed a pinion, which, by means of a toothed chain, gives motion to another pinion fixed to the double screw *i*; this double screw gives a traversing to-and-fro motion to the guide *j*, for distributing the tobacco evenly on the bobbin, by means of a swivel T-headed stud, connected with the guide, and taking into the thread of the double screw. The guide is provided with two horizontal grooved rollers, between which the tobacco passes, and with two other rollers to guide the tobacco on to the bobbin.

Rotary motion is communicated to the segment-rollers *c d e* as follows:—To the hollow trunnion of the open frame *g*, is affixed a pinion, which drives the wheel *k*, on the same shaft as the change-pinion that drives the wheel gearing into the pinions on the axles of the rollers *c* and *d*, and one of which pinions gears into the intermediate pinion *l*, which drives the pinions