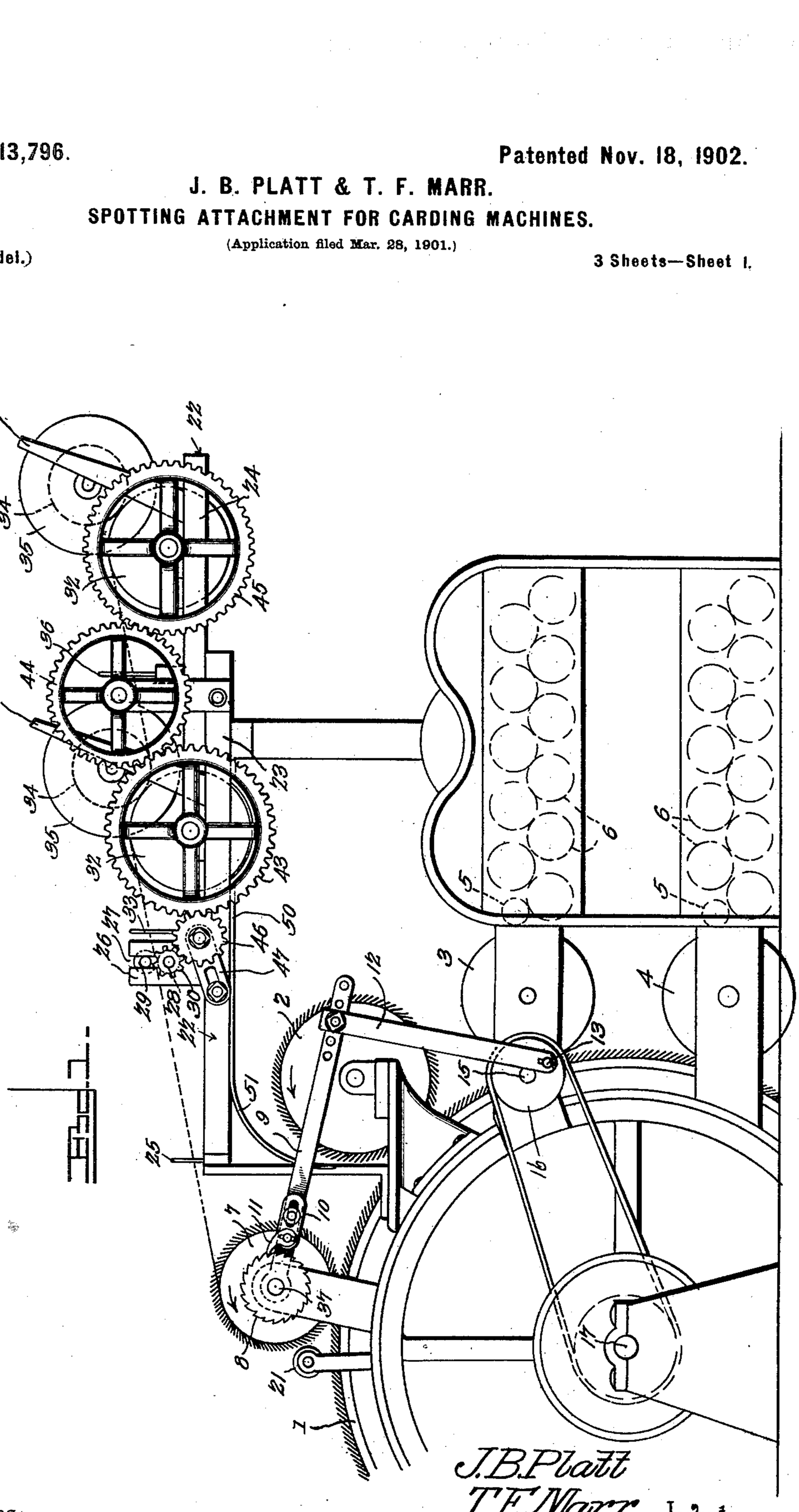
No. 713,796. Patented Nov. 18, 1902.

J. B. PLATT & T. F. MARR.

SPOTTING ATTACHMENT FOR CARDING MACHINES.

(Application filed Mar. 28, 1901.)

(No Model.) 3 Sheets—Sheet 1.



Witnesses
E. F. Stewart
Chas. S. Hoyer.

J. B. Platt
T. F. Marr Inventors
By Church & Co.
Attorneys

No. 713,796. Patented Nov. 18, 1902.

J. B. PLATT & T. F. MARR.

SPOTTING ATTACHMENT FOR CARDING MACHINES.

(Application filed Mar. 28, 1901.)

(No Model.) 3 Sheets—Sheet 2.

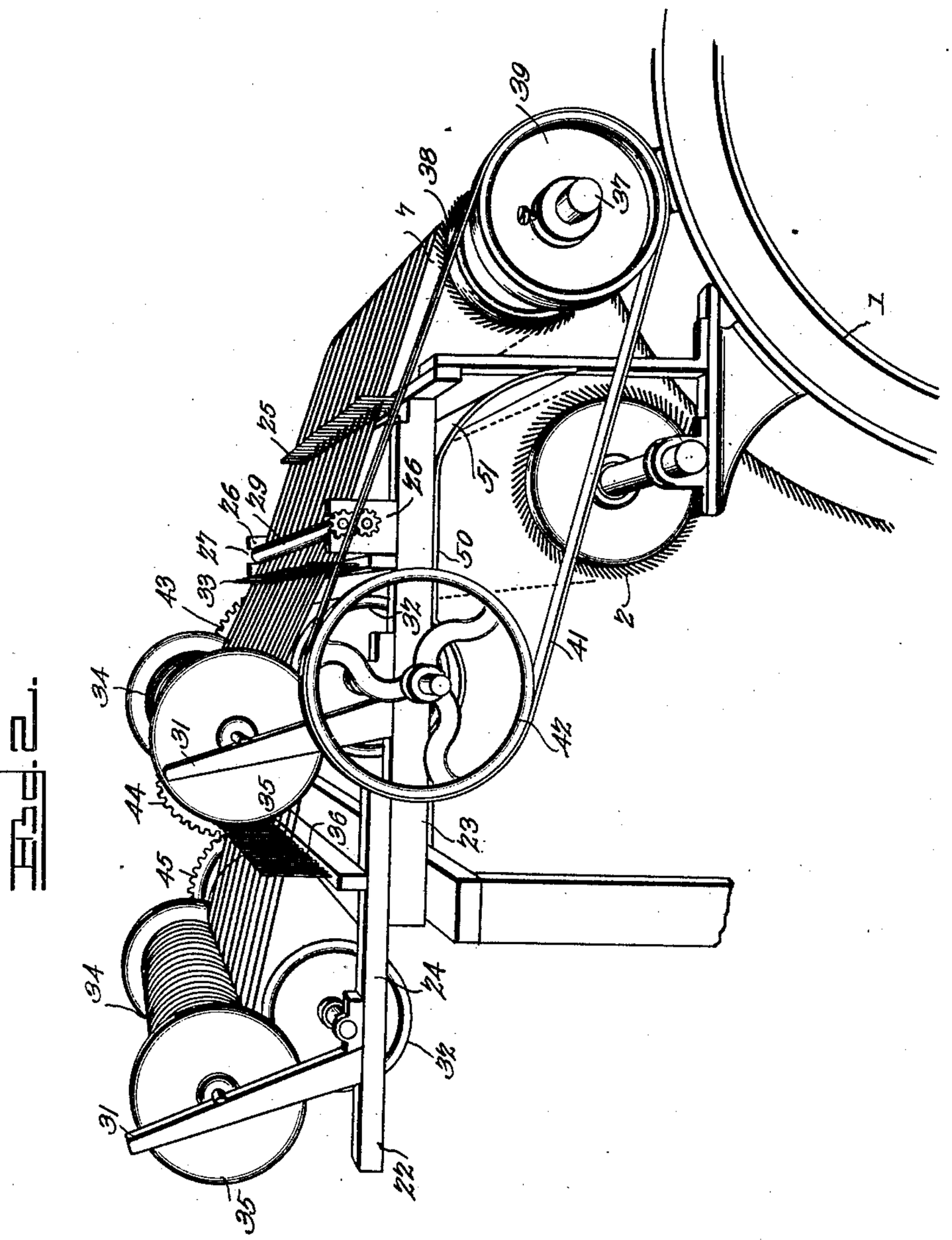


FIG. 2.

Witnesses
R. F. Stewart
Chas. S. Hyer.

J. B. Platt
T. F. Marr Inventors
By Cushman & Co.
Attorneys

No. 713,796. Patented Nov. 18, 1902.

J. B. PLATT & T. F. MARR.

SPOTTING ATTACHMENT FOR CARDING MACHINES.

(Application filed Mar. 28, 1901.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 2.

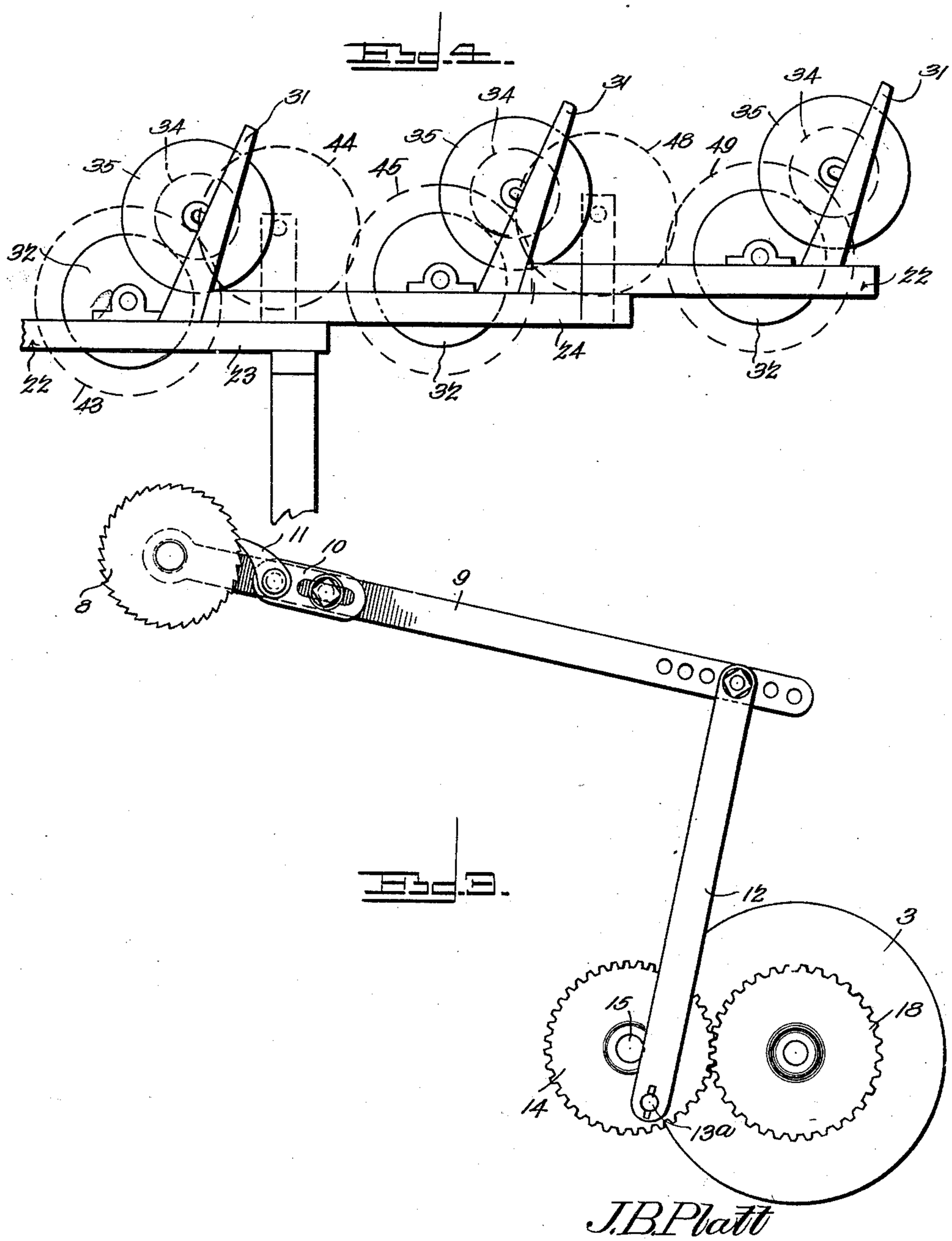
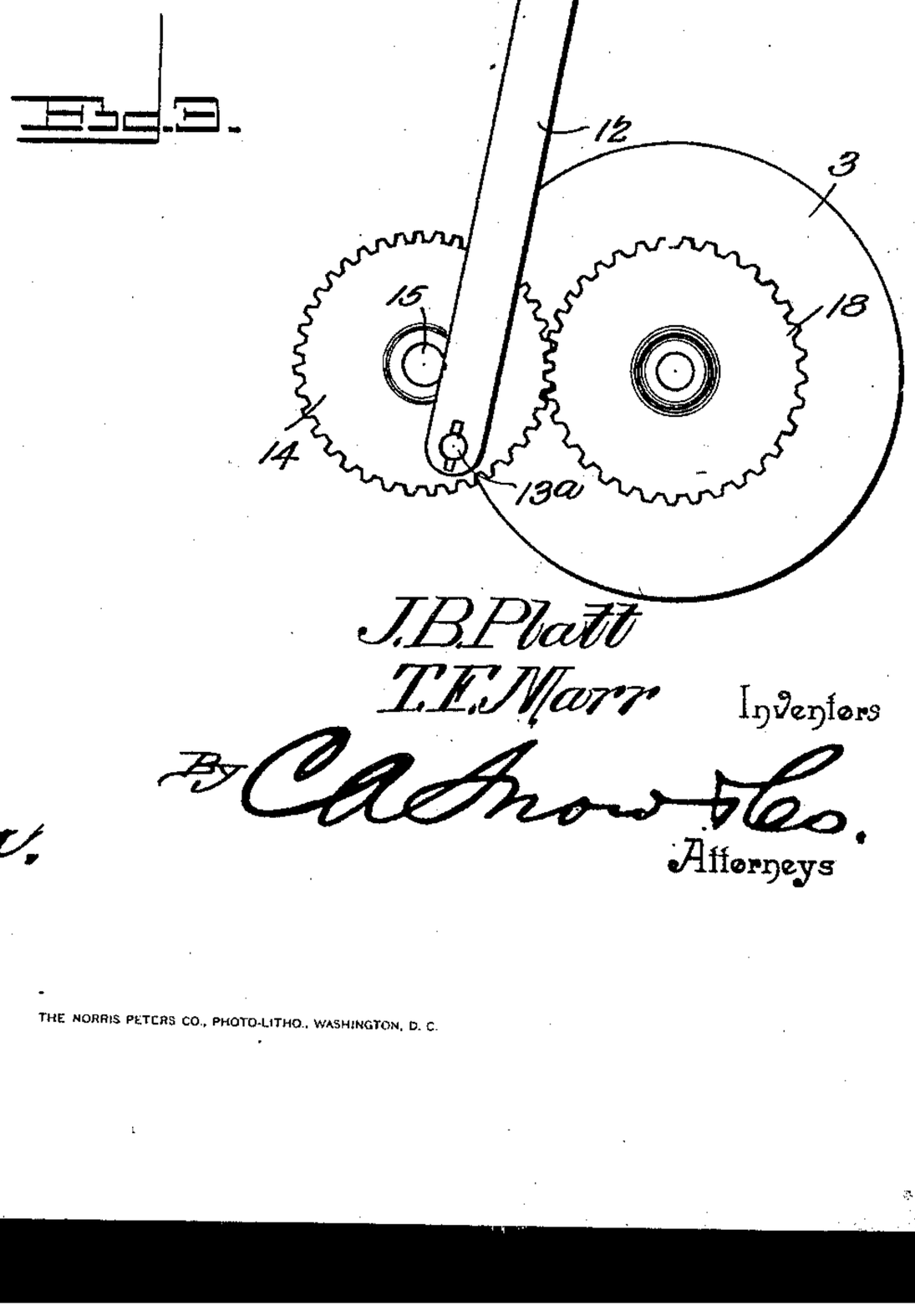


Fig. 3.



Witnesses
E. F. Stewart.
Chas. S. Hoyer.

J. B. Platt
T. F. Marr Inventors
By Church & Co.
Attorneys

UNITED STATES PATENT OFFICE.

JAMES B. PLATT AND THOMAS FRANK MARR, OF ASHLAND, NEW HAMPSHIRE.

SPOTTING ATTACHMENT FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 713,796, dated November 18, 1902.

Application filed March 28, 1901. Serial No. 53,334. (No model.)

To all whom it may concern:

Be it known that we, JAMES B. PLATT and THOMAS FRANK MARR, citizens of the United States, residing at Ashland, in the county of Grafton and State of New Hampshire, have invented a new and useful Spotting Attachment for Carding-Machines, of which the following is a specification.

This invention relates to an attachment for making fancy spot or random roping on finisher-cards from animal or vegetable fiber, which when spun gives a varied or fancy effect to goods knit or woven from the same.

The primary object of the present attachment is to practically arrive at the result sought in a simple and effective manner and to produce one or more spots of any length or size on roving and of the same or different colors and to have said attachment readily applicable to or removable from an ordinary finisher-card and avoid disorganizing or reconstructing the latter.

With this and other objects and advantages in view the invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of a portion of a finisher-card, showing the improved attachment applied in operative relation thereto. Fig. 2 is a perspective view of the improved attachment and a portion of the card looking toward the side opposite that shown by Fig. 1. Fig. 3 is a detail elevation of one portion of the attachment, on an enlarged scale, with a modification. Fig. 4 is a side elevation of a modification of a portion of the attachment.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates the usual cylinder, having the requisite number of strippers and workers as may be necessary for the work usually performed thereby and also provided with a fancy 2, an upper ring-doffer 3, a lower ring-doffer 4, wiper-rolls 5, and rub-rolls 6. In advance of the fancy is a supply-roller 7, as shown, which may be in the form of a reversed worker, the teeth thereof pointing away from the fancy 2 toward the feed. By this arrangement the teeth of the said roller 7 are disposed in the best position for carrying the roving or spotting yarn to the cylinder and offers the least resistance when delivering it to the latter. Fixed to the roller 7 is a ratchet-wheel 8, and loosely engaging the shaft of said roller is a pawl-stroke lever 9, having a pawl-plate 10 adjustably mounted thereon and movably carrying a pawl 11, which engages the ratchet-wheel 8. To the end of the lever 9, opposite that engaging the shaft of the roller 7, the upper end of a connecting bar or link 12 is adjustably attached and is also movably secured at its opposite end to a crank 13 or the like on a pulley 16, held by a stub-shaft 15, projecting from the frame, or, as shown by Fig. 3, a crank 13^a may be secured to a pinion or other gear 14, substituted for the pulley 16 on the said stub-shaft, and said pinion or other gear is in mesh with a similar gear 18 on the adjacent end of the shaft of the upper ring-doffer 3. At present the pulley and crank alone are used without the gears 14 and 18; but it is proposed to use said gears as may be desired and found expedient. The pulley 16 is engaged by a suitable belt from the cylinder-shaft 17, and the remaining parts are driven or set in motion by devices ordinarily used in cards. It will be seen that the upstroke of the bar or link 12 will elevate the lever 9, and thus the pawl 11 will be caused to throw the ratchet-wheel 8 around the distance desired to produce a step-by-step feed of the roller 7, and the adjustment of the bar or link in relation to the lever 9 can be quickly regulated to increase or decrease the stroke of the lever and the movement of the roller to produce different results or to accommodate different operations, as will be hereinafter referred to. Adjacent to the roller 7 is a guard 21, which may be in the form of a plain shaft or a stripper which has been deprived of its clothing, and by the use of such guard at this point the spotting material, which is brought forward by the supply-roller to the cylinder, is properly guided and is not broken or otherwise irregularly disturbed, and a proper feed of the said material is thus produced.

The roller 21 serves to prevent the spotting

material rising above the surface of the roller 7 when pieces of spotting material are removed by the card; but such roller may, if desired, be dispensed with.

The main portion of the improved attachment comprises a frame 22, which may be bolted or otherwise secured to the frame of the card, or said frame may be held on the supporting-flooring or other base for the card; but in either arrangement the said frame will be easily removable and applicable, so that the card may be used alone to perform its usual function and also have the one machine capable of being readily prepared for two distinct operations without disorganization of the same or the provision of an extra or special machine for the purpose of spotting only. The frame 22 includes a bed 23 with an extension 24, and the said parts are provided with suitable bearings for the working or movable elements of the improved attachment, and one end of the bed is located adjacent to the roller 7, and on said end are a plurality of transversely-alined upright guides 25. On the bed are opposite bearing-standards 26 with slots 27 opening out through the upper extremities thereof, and engaging said standards are lower and upper guide-rolls 28 and 29, the lower guide-roll 28 remaining at all times in the standards and having at one end a driving-pinion 30, the upper roll 29 being freely removable and normally held in operative position by its own weight. The rolls set forth are adapted to guide the spotting material or roving, and by having the upper roll removable said material may be easily placed between the rolls and be regularly held for movement through the guides 25 to the worker 7 and by the latter be fed to the cylinder in accordance with the movement of the said worker. At opposite sides of the bed and extension are rearwardly-inclined uprights 31, arranged in transversely-alined pairs and those on each side also in longitudinal alinement. Mounted in suitable bearings adjacent to the lower ends of the uprights are iron or other suitable cylinders 32, one in the bed proper and the other in the extension, both cylinders being transversely disposed in relation to the parts supporting the same and extending fully across the same. In front of the forward cylinder 32 is a series of transversely-alined guides 33 for directing the spotting material from the cylinders to the front guides 25. Between the front and rear cylinders are a plurality of transversely-alined guides 36, similar to the guides 25, for directing the spotting material that comes over the rear cylinder to the front cylinder, as shown. Over the cylinders 32 at a rearward inclination in relation thereto are spotting spools or carriers 34 for the spotting material or roving, the said spools having flanged heads 35 at such distance apart as to be capable of embracing or moving downwardly over the ends of the cylinders. One spool will be arranged over each cylinder, and both spools have spindles, on which they rotate, the spindles being provided with suitable end projections having flat bearing-faces to movably rest on the front edges of the uprights 31. As the spotting material is drawn from the spools the latter gravitate or automatically move downwardly close to the cylinders and maintain a continuous tension or sufficient tautness on the spotting material unwound from the spools and also a desirable close bearing of the said material on the cylinders. As the quantity of spotting material on the spools decreases said spools gradually lower, and thereby a constant close relation thereof with the cylinders is preserved. By having the spools disposed at a rearward angle of inclination the upper central portions of the cylinders are cleared and the spotting material can be drawn from the lower portions of the spools and freely over the upper portions of the cylinders. In the form of the improvement shown by Figs. 1 and 2 the spotting material from the rear spool is brought forward over the rear cylinder under the forward spool, and the strands from the two spools then caused to move together over the forward cylinder between the guide-rolls 28 and 29, and from the latter the strands move between the guides 25 to the roller 7. By this arrangement the spotting effect can be produced in two colors, as the spotting material on the rear spool may be of one color and that on the forward spool of another color. Either one of the spools may be used alone, however, in view of the easy detachment of the one not desired for operation, and the spot may thus be produced in one color. In the form of the device shown by Fig. 4 three spools and the same number of cylinders are shown, demonstrating that three colors may be produced in the spots, and by this modified showing it is intended to be understood that one or more colors may be utilized, the operating mechanism being substantially the same in both forms with the exception of the additional gearing and such extra guides as may be necessary.

The end of the roller 7 opposite that supplied with the ratchet mechanism heretofore set forth is provided with an inside pulley 38, which drives the said roller when in proper position and employed as a worker on ordinary work and the spotting attachment is not in operation, and at that time is made fast by a set-screw to the shaft 37 thereof. When the roller 7 is reversed and used as an ordinary worker, a suitable stripper is placed in the position occupied by the smooth roller 21 to coact with said worker. When the spotting attachment is used, the said pulley 38 is loosened, so as to run idle on the shaft 37, and then simply acts as a carrier for the belt driving the workers and during such loose condition does not in any way interfere with the step-by-step motion imparted to the shaft 37 by the ratchet mechanism heretofore ex-

plained. A pulley 39 is immovably fastened on the shaft 37, and therefrom a belt or analogous device 41 runs to a band-wheel 42 on one end of the forward cylinder 32 to rotate the said cylinder toward the supply-roller 7 to regularly feed the spotting material coming thereover in a forward direction. The end of the forward cylinder 32 opposite that carrying the band-wheel 42 is provided with a spur-gear 43, which meshes with an interposed idler 44, and the latter in turn meshes with a spur-gear 45 on the one end of the rear cylinder 32, which is also forwardly rotated to regularly feed the spotting material from the rear spool. The gear 43 also meshes with a small idler 46, carried by a bracket 47, and said idler in turn rotates the lower guide-roll 28 through the pinion 30 on the latter. By this means all the moving parts can be driven at the required speed and in the proper direction, and the gearing in the modification shown by Fig. 4 is precisely the same with the addition of an idler 48 and a spur-gear 49 for the third cylinder. The several spools may also be supplied with windings or rovings individually having different colors embodied therein, and thereby a limitless number of effects can be produced. If one spool be employed, for the purpose of illustration, it is supplied with the color of roving desired, having as many ends as the number of rings on the doffers. This spool is then disposed over one of the drums and the ends of the roving carried forward between the guide-rolls 28 and 29 and the guides 25 to the roller 7. The direction of the teeth in this roller 7, as heretofore explained, disposes the said teeth in the best position for carrying the roving fed thereto from the spool to the cylinder 1 with the least resistance. As the ratchet mechanism operates the roller 7 the ends of the spotting material are presented to the cylinder 1, and as the movement of the roller is intermittent the cylinder set forth takes the ends or pieces of the spotting material and breaks them off during the intervals when the roller is at rest or between the times of movement of the same, and from the said cylinder the spotting pieces or portions are deposited on the rings of the doffers. By the particular construction and operation of the devices for operating the ratchet, as heretofore set forth, the length of the spots and the speed of feed of the same to the cylinder 1 may be regulated at will and in proportion to the revolution of the doffers, and, moreover, the speed of the several parts may be changed by varying the size of the gears, which is a change fully within the scope of the invention. The amount or length of the spotting material carried by the roller to the cylinder 1 will depend on the adjustment of the throw of the pawl engaging the ratchet-wheel on the roller, and in view of the direction of the teeth of the roller 7 said teeth are easily freed of the spotting material by the cylinder 1 and do not catch the other stock forming the ground on which the spots are to be disposed and passing regularly through the card. In preparing the spools coarse roving or yarn of a soft twist can be employed and spooled with a certain number of ends on a spool or spools, according to the number of rings on the card, and, as before indicated, one or more spools can be run at the same time if a combination of spots is desired, and also one, two, or more colored spots can be put on each thread. If a combination of spots is desired—say red, white, and blue—one spool would carry red thread or roving, one spool white, and one spool blue, and each guide would then have a red, a white, and a blue thread, or, in other words, the spotting material would be delivered to the worker in three-ply form. The spotting material may be cotton, wool, silk, and animal or vegetable fiber. It will also be understood that the heavier the spotting material used or carried by the spool or spools the larger the spot, and, conversely, the finer the said material the smaller the spot.

The use of the roller particularly set forth for receiving the spotting material and delivering it to the cylinder 1 is preferred, because the spotting material is not liable to be carded out; but it is obvious that a supply-roller nearer the feed of the card can be employed, and in this application of the spotting material the spots would be broken up more. If a shaded effect is desired, it can be obtained by running the spotting material or threads onto a roller near the feed of the card, and being caused to pass under the workers it will be more fully mixed or blended.

There are many other variations possible in the operation of applying the spots by means of the improved attachment without disorganizing the several instrumentalities of the card or changing the attachment in the least which will be obvious to those skilled in the art; but enough has been set forth to illustrate the general usefulness of the improvement. To prevent the flyings from the fancy passing upwardly and lodging on and among the spools carrying the spotting material and also on the cylinders 32, a sheet-metal bottom 50 is secured to the under side of the bed of the attachment and has an inner downwardly-curved extremity 51, which forms a guide to conduct the flyings into the card again. Though the preferred construction of the improvement has been shown and described, it is obvious that changes in the form, size, proportions, and minor detail may be resorted to without departing from the principle of the invention.

Having thus described the invention, what is claimed as new is—

1. The combination with a finisher-card or the like, of a stationary frame horizontally disposed in a plane above that of the card, the fancy, the supply-roller arranged in advance thereof and operating to feed to the cards a series of spotting rovings, a series of guides

arranged to the rear of the supply-roller, a spool carrying a series of rovings of said spotting material, a drum on which the rovings of the spool rest, said drum and spool being supported by said frame, means for imparting step-by-step movement to the supply-roller, and means connecting the drum to the supply-roller for transmitting the step-by-step movement of the supply-roller to the drum, substantially as specified.

2. The combination with a finisher-card or the like, of a supply-roll having a step-by-step movement, a plurality of spools carrying rovings of spotting material, feeding-drums disposed one under each of such spools, guides arranged between the forward spool and the supply-roll for directing the rovings to proper points on the supply-roll, means connecting the supply-roll to one of such drums for effecting the transmission of the step-by-step movement of the supply-roll to such drum and mechanism operatively connecting all of such drums, substantially as specified.

3. The combination with a finisher-card or the like, of a spotting attachment comprising a horizontally-disposed frame applied above the plane of the cylinder of the card and having opposite pairs of rearwardly-inclined uprights spaced apart from each other, a cylinder adjacent to and mainly in advance of each transversely-alined pair of said uprights, a loosely-mounted gravitating spool having the opposite end portions in contact with the front edges of each transversely-alined pair of said uprights to dispose the same at a rearward inclination to the roller below with which it is in contact, all the uprights being similarly inclined rearwardly, guides at the end of the frame adjacent to the cylinder, upper and lower guide-rolls disposed between the guide and spools, gearing connecting the cylinders and one of such guide-rolls, and means for imparting a step-by-step feed motion to the material carried by the spools.

4. The combination with a finisher-card or the like, of a stationary frame horizontally disposed in a plane above that of the card-cylinder, a series of gravitating spools mounted on said frame and carrying spotting material, the said spools being disposed behind each other, a similar number of cylinders with which the spools coact, a supply-roll disposed on the upper portion of the card-cylinder, and adjustable mechanism for giving the said supply-roll a step-by-step movement.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JAMES B. PLATT.
THOMAS FRANK MARR.

Witnesses:
GEO. F. DODGE,
JOHN E. MORRISON.