My invention relates to means which are supported coils of material, such as that from which fastenings are severed for use in the attachment of work-pieces. It is of particular utility in connection with inserting machines in which a considerable number of fastenings must be supplied for each operation.

An example of the type of machine above mentioned may be seen in Letters Patent of the United States No. 2,293,624, Parkhurst, August 18, 1942. Here, loads of pegs are cut from a plurality of strings of fiber for delivery to inserting mechanism. These strings are in coils, and various methods of supporting these coils in the machine have been employed. Reels upon which the coils are placed side by side upon spindles at opposite sides of the machine, the coils being turned about the spindles as the strings are drawn off by the feeding mechanism. This arrangement takes up much space which it is undesirable to occupy, and the reels offer considerable resistance to rotation because of their friction upon the spindles and against each other. Another procedure is to wind all the strings in parallel about one or more reels. In this case, the strings tend to interfere with each other as they are delivered. Both plans are troublesome when an exhausted coil must be replaced or the number of strings altered. An object of this invention is to arrange the coils of fastening material in such a manner that, however great may be the number, it is individually and readily accessible without disturbance of the companion coils, and so each may be drawn off with little resistance and with no possibility of interference.

To this end, I provide the frame of a fastening-inserting machine with a projection from which rise a plurality of standards, about each of which one or more carrier-arms is arranged to turn, containers for the coils of material being mounted upon these arms, they being preferably rotatable. There may be means for retaining the arms in a predetermined angular position against turning, this position being such that the delivery to the feeding mechanism of the fastening-inserting machine is most advantageously made. Upon being swung out of this normal position, the containers may be freed completely from their companions for the renewal of the coils. A guide for the material, as for example a tube, at least a portion of which is flexible, is supported by an adjustable guide-arm upon the carrier-arms of each container and may be employed to best receive the material from the coil and to direct it to tubes or other guides upon the machine-frame, through which delivery is made to the feeding mechanism. My invention is not necessarily confined to the employment of a plurality of standards, it being applicable to the manner of mounting a plurality of material-containers upon a single standard, and to the guiding of the material from such containers as hereafter described and claimed.

In the accompanying drawings is illustrated one of the several possible embodiments of my invention.

Fig. 1 shows in side elevation the rear of the frame of a fastening-inserting machine, and including the coil-supports of this invention; Fig. 2 is a top plan view corresponding to Fig. 1;

Fig. 3, a central vertical section through one of the coil-containers; and Fig. 4, a detail in side elevation of the string-guiding and feeding mechanism of the fastening-inserting machine.

In Fig. 4 of the drawings are shown rotatable feed-rolls 10, 10, journaled in the frame 12 of a fastening-inserting machine, which may be of the character of that disclosed in the previously mentioned patent. These rolls are rotated step by step to supply strings of fiber to the loading mechanism of the machine. The strings are guided to the rolls through a set of tubes 14, which are arranged side by side upon the frame and spaced and curved to ensure proper delivery. At the rear of the frame is a horizontal projection 16 (Fig. 1), the upper wall 18 of which is so formed as to furnish points situated at the apices of an isosceles triangle, at which points three standards 20 are stepped. Two of the standards lie along a line close and parallel to the rear of the frame, while the third is located upon the machine-frame, through which delivery is made to the feeding mechanism. My invention is not necessarily confined to the employment of a plurality of standards, it being applicable to the manner of mounting a plurality of material-containers upon a single standard, and to the guiding of the material from such containers as hereafter described and claimed.

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Each of the carrier-arms 24 has a vertical end-portion 28 into which is threaded the reduced lower end 20 of a stud 30. The reduced upper end 32 of the stud is slotted for the recep-
tion of a screw-driver for turning the lower end 28 into place. Between this end 28 and the body of the stud is a portion of intermediate diameter forming a lower shoulder 36 and an upper shoulder 38. The shoulder 36 limits the depth of insertion of the stud into the arm-portion 26, while the upper shoulder retains in place, with some intermediate clearance, an antifriction bearing 40, which may be of any desired type. Receiving upon this bearing and free to rotate about the stud 28 is the hub 42 of a container 44 for a coil C of the fastening material F. The container is in the form of a tray, from the bottom of which an inclined inner wall 45 leads to the hub, while at the outside rises a vertical wall 48. Fixed by a set-screw 50 to the end 32 of the stud is an arm 52, the outer extremity of which is transversely grooved. This groove receives a compound tube made up of a flexible section 54, which may be of helically wound spring-wire extending downwardly into the container, and a rigid section 56 bent upwardly toward the receiving tubes 14. The compound tube is clamped in place by a washer through which passes a screw 58 threaded vertically into the top of the arm 52. Each arm 52 may be held in a predetermined angular position about its standard 20, to locate its container 44 to best deliver the string from the contained coil C to the corresponding tube 14 upon the machine-frame. This means is shown as a depression 60 (Fig. 1) in the underside of the hub of the arm 54, which in delivering position of the container seats itself upon a pin 62 fixed horizontally in the side of the standard. This pin also supports and determines the vertical location of the containers in the series. The relation of the depression and pin is such that the arms upon each standard all lie at the same angle, while those of different standards are at different angles. This may be seen in Fig. 2 of the drawings, and preferably places the two inner containers symmetrically at opposite sides of the center of the machine-frame and the outer container somewhat to the rear and midway between these. The guide-arms 52 are fixed at such angles by their set-screws 59 about the studs 30, that their guide-tubes 54 will receive the strings F from the coil C in the correct order and direct them properly to the corresponding guide-tubes 14.

In using the support, each container 44 to be employed will be supplied with a coil C of the material F, which is to be delivered. The outer diameter of this coil may be such that it lies close to the inner face of the wall 48. The inner diameter, before unwinding begins, is beneath the end of the guide-tube-section 54. The strings are led up through the tubes 14, those for the lower inner containers also passing through guides 64 attached to the frame-projection 16, and then between the feed-rolls 10. As these rolls are rotated and tension applied to the strings, each coil is unwound, the containers turning readily upon their anti-friction bearings 40. The flexible section 54 of each guide-tube bends to adapt itself to the increasing inner diameter of the unwinding coil, and the angle of the rigid section 56, together with that of the arm 52, directs the string in the correct path to the corresponding receiving tube 14. The resilience of the section 54 also allows it to absorb, to some extent required, the initial stresses applied by the intermittently operating feed-rolls, thus reducing the tendency of the convolutions in the coils to be crowded together and bind. As will be seen from Figs. 1, 2 and 4, these paths are separated at all points, so there cannot be interference. When a fresh coil is to be introduced into a container, or access to the interior of said container is desired for any reason, it is only necessary to swing the arm 24 about its standard 20 to an angle at which it is withdrawn from the containers above and below it, the depression 66 leaving the pin 62. This is accomplished without interference with the containers upon the same or the other standards. When the change has been made, the arm is restored to its normal relation, it being automatically located by the engagement of the arm-depression with the standard-pin.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. The combination with a frame of a fastening-inserting machine having a projection, of a plurality of standards rising from the projection, a carrier-arm arranged to turn about each standard, means for retaining in predetermined angular positions the arms against turning, a container for a coil of the material mounted upon each carrier-arm, a guide for the material mounted upon each carrier-arm, and means for fixing the guides in different angular positions upon the carrier arms, such positions corresponding to different points of reception at the fastening-inserting machine.

2. The combination with a frame of a fastening-inserting machine having a projection, of a plurality of standards rising from the projection and being spaced from one another transversely of the machine-frame, a carrier-arm arranged to turn about each standard, means for retaining in the same angular position upon the same standard the arms against turning, the angular positions being different for different standards, such positions corresponding to different groups of points of reception at the fastening-inserting machine, a guide for the material mounted upon each carrier-arm, and a guide-arm mounted upon each carrier-arm.

3. The combination with a frame of a fastening-inserting machine having a projection and being spaced from one another transversely of the machine-frame, of a plurality of standards rising from the projection, a carrier-arm arranged to turn about each standard, means for retaining in the same angular position upon the same standard the arms against turning, the angular positions being different for different standards, such positions corresponding to different groups of points of reception at the fastening-inserting machine, a container for a coil of the material rotatable upon each carrier-arm, a guide-arm mounted upon each carrier-arm, and means for fixing the guide-arms in different angular positions upon the carrier-arms corresponding to the group of reception-points for which their respective carrier-arms are adjusted.

4. The combination with a frame of a fastening-inserting machine having a projection and being spaced from one another transversely of the machine-frame, of a plurality of standards rising from the projection, a carrier-arm arranged to turn about each standard, means for retaining in predetermined angular positions the arms against turning, one of these positions facilitating access to the container and another locating it for the delivery of the material, a container for a coil of the material rotatable upon each carrier-arm, a guide-tube for the material fixed against movement upon
each carrier-arm, and guides supported upon the machine-frame and to which the respective guide-tubes direct the material, each guide-tube being maintained in the correct relation to the corresponding guide when its container is in delivering position.

5. The combination with a frame of a fastening-inserting machine having a projection, of a plurality of standards rising from the projection, a carrier-arm arranged to turn about each standard, means for retaining in predetermined angular positions the arms against turning, a container for a coil of the material rotatable upon each carrier-arm, a guide-tube for the material mounted upon each carrier-arm and having a flexible section extending downwardly into the container and a rigid section extending upwardly, and guide-tubes supported upon the machine-frame and to which the respective rigid tubes upon the carrier-arms direct the material.

6. A support for coils of fastening material comprising a standard, a carrier-arm projecting from the standard, a container for a coil of the material rotatable upon each carrier-arm, and a guide-arm fixed against movement upon each carrier-arm above the container and having a guide for the fastening material.

7. A support for coils of fastening material comprising a standard, a carrier-arm projecting from the standard, a container for a coil of the material rotatable upon the carrier-arm, a guide-arm secured to the carrier-arm above the container, and a flexible guide-tube for the material fixed in the carrier-arm and adapted to yield as the position of the coil is altered by the rotation of the container.

8. A support for coils of fastening material comprising a standard, a carrier-arm projecting horizontally from the standard and having a vertical end-portion provided near its top with a bearing, a container rotatable upon the bearing, a guide-arm secured to the end-portion of the carrier-arm above the container, and a guide-tube for the material clamped in the end of the guide-arm, at least a portion of the tube being flexible.

9. A support for coils of fastening material comprising a standard, a carrier-arm projecting horizontally from the standard and having a vertical end-portion, a shouldered stud threaded into the upper extremity of the end-portion, an antifriction bearing held between the end-portion and the shoulder, a container having a hub surrounding the stud and resting upon the antifriction bearing, a guide-arm carried by the stud above the container, and means for fixing the guide-arm in different angular positions about the stud.

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