Sept. 4, 1928. 1,683,224

W. H. WILSON

SPOOL FOR AXMINSTER LOOMS

Filed July 5, 1927

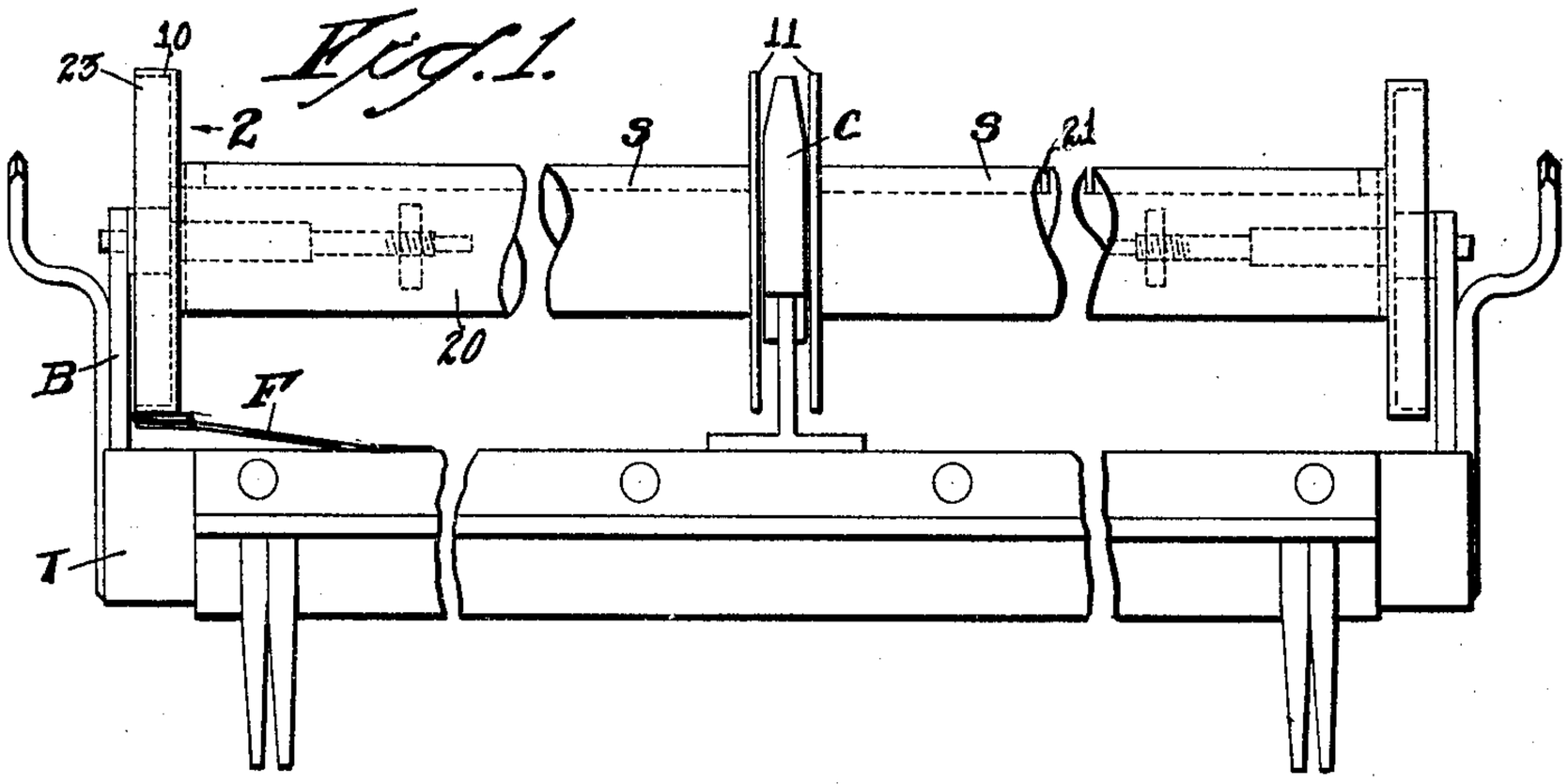

Fig. 1.

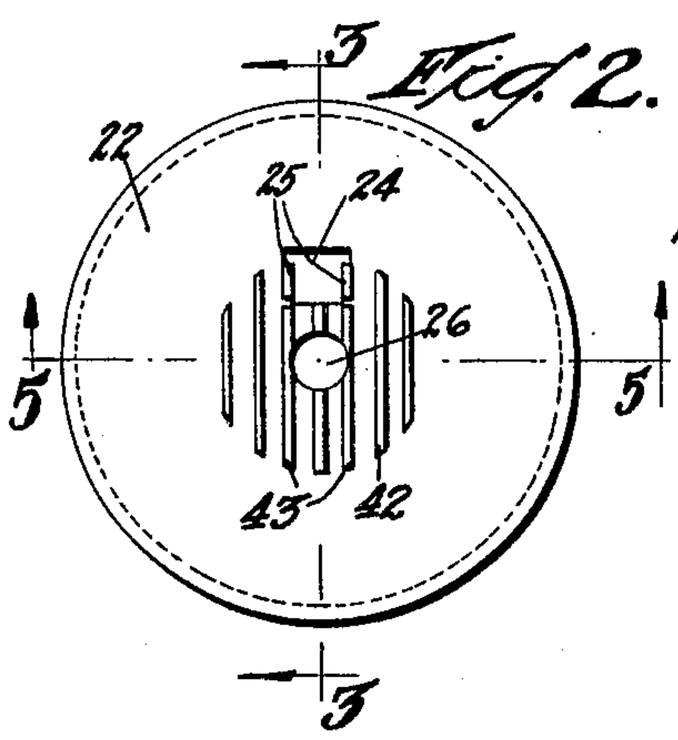

Fig. 2.

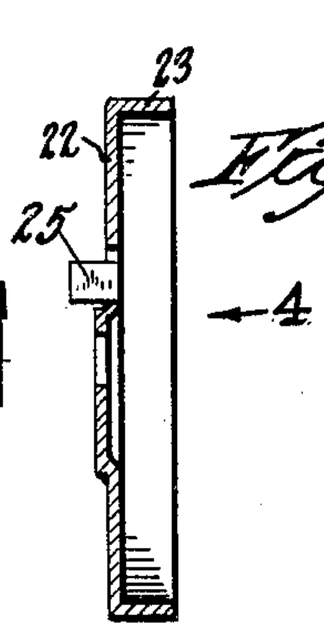

Fig. 3.

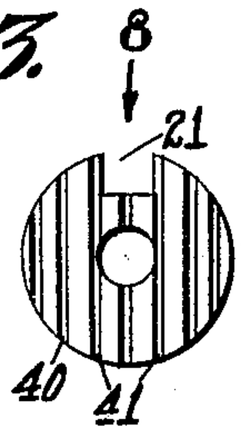

Fig. 7

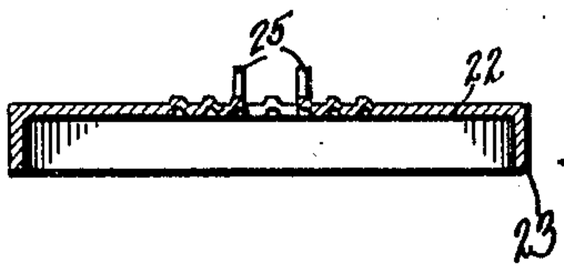

Fig. 5.

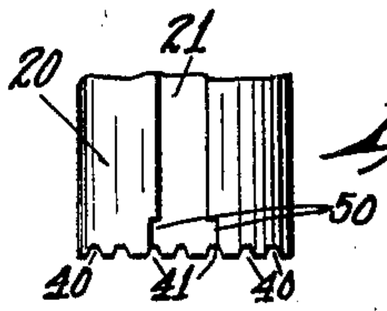

Fig. 8

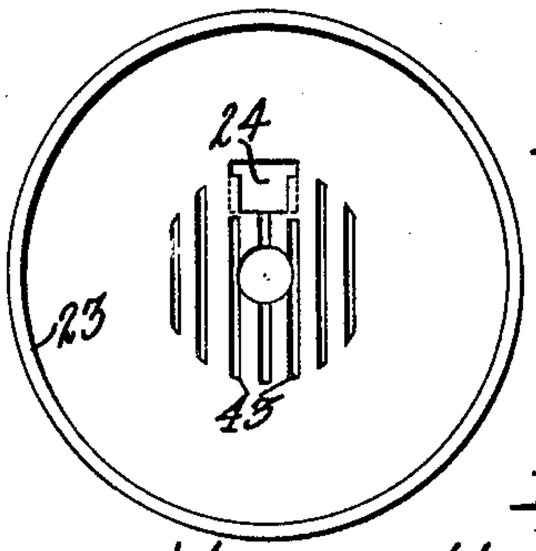

Fig. 4.

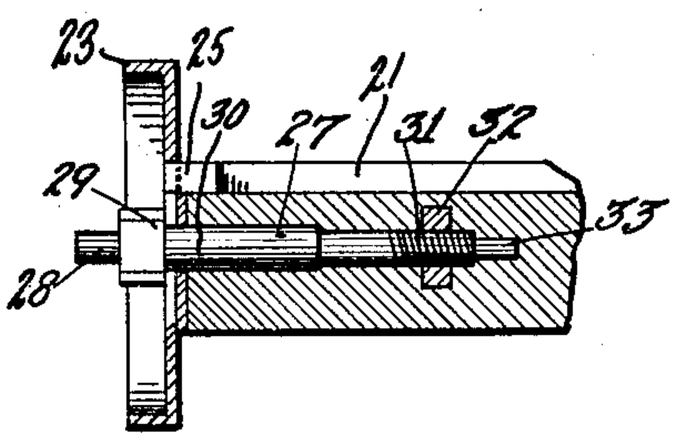

Fig. 6.

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Patented Sept. 4, 1928. 1,683,224

UNITED STATES PATENT OFFICE.

WILLIAM H. WILSON, OF BURLINGTON, VERMONT, ASSIGNOR TO VERMONT SPOOL & BOBBIN CO., OF BURLINGTON, VERMONT, A CORPORATION OF VERMONT.

SPOOL FOR AXMINSTER LOOMS.

Application filed July 5, 1927. Serial No. 203,446.

This invention relates to improvements in spools particularly those used on the carrier chains of Axminster looms and it is the general object of the invention to provide a spool having a barrel and a flange or head so held to the barrel as to prevent relative angular movement of these parts.

Axminster looms operate with a large number of tube frames which are presented one at a time to the fabric. The tube frames carry spools on which are wound variously colored yarns arranged in a predetermined order according to the pattern. When yarns are being wound on the spools the latter are placed in a winding machine and rotated to draw the yarns from a creel by having the spool head engaged by a driving clutch. Each yarn is under tension and in a 27 inch spool there will ordinarily be 189 warp threads so that the strain of rotating the barrel is considerable. This strain must be transmitted through the connection between the head and the spool barrel and as heretofore constructed this strain has been taken in part by lugs which enter a slot in the barrel and in part by tangs extending from the body of the head into the end of the barrel. It has been found that while this method of preventing relative rotary movement between the head of the barrel will operate sufficiently well for mill conditions yet the construction is not free from faults and it is an important object of my present invention to form the head and end of the barrel with complementary mutually engaging portions which will positively prevent relative rotary movement of the barrel and the head. As shown herein I form corrugations on the head which enter grooves extending across the end of the barrel.

Before the winding operation can be started it is necessary to provide some means for holding the yarns to the barrel and this is usually done by a rod lying in a slot extending lengthwise of the barrel. This rod must of course pass through the head and when the latter is formed of steel it has usually been made as set forth in patent to Hutchins No. 1,067,656 with small lugs lying on each side of the opening for the rod which extend into the slot in the barrel. In this way the lugs position the opening so that it necessarily registers with the slot to guide the rod into its proper position. It is a further object of my present invention to locate the grooves across the end of the barrel so they will facilitate the positioning of the lugs with respect to the slot in the barrel.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawings, wherein I have shown a convenient embodiment of my invention,

Fig. 1 is a front elevation of parts of a tube frame carrying spools made according to my present invention,

Fig. 2 is an enlarged view of the inner face of one of the spool heads taken in the direction of arrow 2, Fig. 1,

Fig. 3 is a vertical section on line 3—3 of Fig. 2,

Fig. 4 is a side view of one of the spool heads taken from the outside and looking in the direction of arrow 4, Fig. 3,

Fig. 5 is a horizontal section on line 5—5 of Fig. 2,

Fig. 6 is a partial vertical section through one end of one of the spools shown in Fig. 1 and illustrating the manner of securing the head to the barrel against longitudinal displacement,

Fig. 7 is an end view of one of the barrels, and

Fig. 8 is a detail top plan view of one end of the barrel taken in the direction of arrow 8, Fig. 7.

Referring particularly to Fig. 1 I have illustrated the invention in connection with a tube frame of an Axminster loom, said frame being indicated at T and having end brackets B and a center bearing C. The spools S are supported by the end and center bearings and there may be as many spools as required, one spool ordinarily being sufficient for fabrics 27 and 36 inches wide, two spools sufficing for fabrics up to 72 inches in width and three spools being used on so-called 12/4 looms for weaving a fabric 9 feet wide. As shown herein the spools are provided with two forms of heads one indicated at 10 as having a relatively broad rim to cooperate with a friction device on the tube frame indicated at F and the other head indicated at 11 having a narrow rim and being adjacent one of the center bearings C. My invention relates to the con-

struction of either form of head. Ordinarily there will be only two heads of the form indicated at 10, namely, those which are at the ends of the tube frames to cooperate with the friction devices, while the heads intermediate the ends will be without friction flanges and of the type shown at 11 and where three or more spools are used on a tube frame each end of the center spools will be provided with heads of the type shown at 11. The heads at each end of the spool may be made the same or each spool may be provided with but one head made according to my present invention and as the ends of the spools may be the same a description of one will be sufficient to set forth my invention.

The spool is provided with a barrel 20 made preferably though not necessarily of wood and having a slot 21 extending therealong to receive a yarn end retaining rod not shown but proportioned to clamp the variously colored threads from the reel in the groove 21. The head 10 may be formed of a piece of flat sheet metal and have a flat body 22 and flange 23. Said body has a hole 24 adapted to register with the groove 21 and said hole is formed by punching a pair of ears 25 from the body 22 in a direction to extend into the slot 21 and said opening 24 is sufficiently large to pass the aforesaid yarn retaining rod. The body 22 is also provided with an opening 26 through which extends a bolt 27 indicated more particularly in Fig. 6. Said bolt is provided with a gudgeon 28 for one of the bearings and has an enlarged head 29 and a reduced threaded shank 30 adapted to extend through the opening 26. In order to hold said shank and head in place I provide a metal nut or lug 32 driven into a hole in the barrel 20 and having a threaded opening to receive the part 31 of the bolt. The tip end of said bolt may be reduced as at 33 to facilitate finding the threaded opening in the nut or lug 32. The head 29 is non-circular in cross section to afford means by which the threaded portion 31 may be turned into the nut 32. The ears 25 and their relation with the opening 24 and groove 21 may be the same as set forth in the aforesaid patent to Hutchins and the method of securing the head to the barrel, although somewhat different from that shown in the Hutchins patent, forms no part of my present invention.

As previously stated my present invention relates to improved means for preventing angular movement between the head and the barrel especially when the yarns are being wound on the spool. In carrying my present invention into effect I provide the end of the barrel with a number of preferably parallel grooves 40 certain of said grooves as indicated particularly at 41 extending in line with the edges of the slot 21 and being spaced apart a distance substantially equal to the distance between the ears 25. The body portion 22 of the head is provided with elongated corrugations 42 proportioned to fit snugly into the grooves 40 and 41. Certain of these corrugations as indicated at 43 are in alignment with the ears 25 while the other lugs are proportioned and spaced so as to enter the grooves on the end of the spool barrel. As shown in Fig. 4 I find it desirable not to extend the corrugations 43 up to the ears 25 inasmuch as to do so might cause the die which produces the corrugations to weaken that part of the metal of which the ears 25 are formed.

In assembling the ears 25 are caused to enter the upper ends of the grooves 41 so as to be properly positioned with respect to the slot 21, after which the head may be forced in position, the ears making slight recesses as indicated at 50 in Fig. 8. This operation moves the corrugations 42 and 43 into the grooves 40 and 41, respectively, with the opening 24 properly aligned with the slot 21. The bolt 27 may then be passed through the opening 26 and into a hole previously bored through the barrel so that said bolt may be threaded through the nut 32 with the head tight against the body of the barrel so as to hold the corrugations in the grooves on the end of the barrel. In this way angular movement between the head and barrel is effectively prevented.

From the foregoing it will be seen that I have provided a very simple means for holding the head of an Axminster spool to the barrel and that the ears which serve to align the opening 24 in the head with the slot 21 in the barrel are guided by certain of the slots across the end of the barrel. Although I have shown the corrugations on the head as being confined substantially within a circle of the same diameter as that of the barrel yet I do not wish to be limited to this construction as the invention will be equally effective irrespective of the length of the corrugations on the head, provided they are of sufficient length to have proper holding engagement with the grooves in the barrel. It will also be seen that certain of the corrugations, namely those which enter the slots 41, do not extend sufficiently to weaken the ears 25. This feature is not essential but when the head is made from sheet steel by a punching operation the corrugations are formed by corresponding depressions on the opposite side of the head and these depressions might weaken the ears if they are extended too far.

Having thus described my invention it will be apparent that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish

to be limited to the details herein disclosed, but what I claim is:

1. In an Axminster loom spool having a barrel with a longitudinal slot therein, a head having an opening to register with the slot, and interengaging grooves and corrugations on the barrel and head, respectively, ears extending from the head on opposite sides of the opening and located to align with certain of the grooves in the barrel to be guided with respect to the slot so that one ear lies on each side of the slot.

2. In an Axminster loom spool having a barrel the periphery of which has a longitudinal slot therein, means defining grooves extending across the end of the barrel, a head having an opening therein to register with the slot, ears formed on the head and lying on each side of the opening in the head, and corrugations formed on the head to enter the grooves in the end of the barrel, the ears aligning with certain of the grooves to be guided with respect to the slot so that one ear will lie on each side of the slot.

3. In an Axminster loom spool having a barrel with a longitudinal slot therein, the end of the barrel having a plurality of parallel grooves formed therein extending substantially parallel to the side walls of the slot in the barrel, a head for the spool, projections extending from said head and arranged to enter the grooves in the barrel, ears on the head parallel to the projections and aligning with certain of the grooves, said head having an opening between the ears which is held in alignment with the slot in the barrel by the ears and projections as they enter the slot and grooves respectively.

4. A spool barrel to form part of an Axminster loom spool, said barrel having a slot extending longitudinally therein with substantially parallel side walls, the end of the barrel having a plurality of parallel grooves extending thereacross and which are parallel to the side walls of the slots and certain of which register with the side walls of the slot to guide ears carried by a spool head.

In testimony whereof I have hereunto affixed my signature.

WILLIAM H. WILSON.