(No Model.) 2 Sheets—Sheet 1.

J. W. WHITE.

WIRE WEAVING LOOM AND SHUTTLE.

No. 560,179. Patented May 12, 1896.

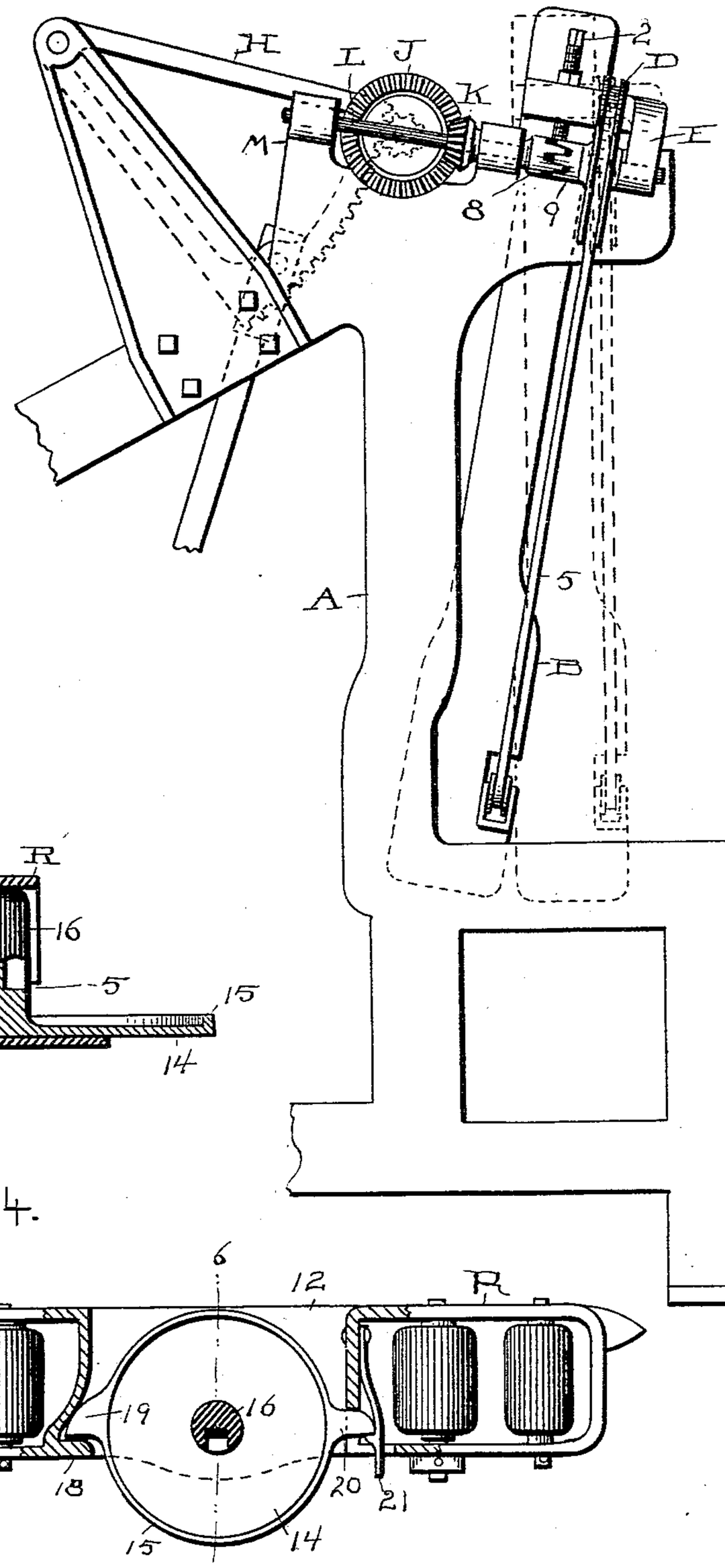

Fig. 1.

Fig. 3.

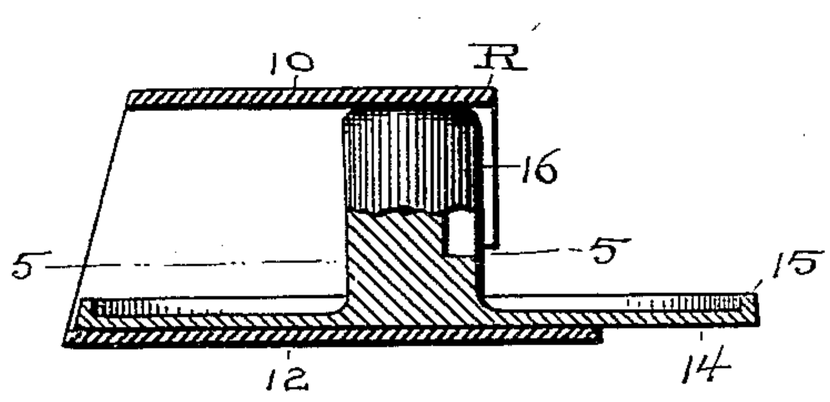

Fig. 4.

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ATTEST.

R. B. Moser.

A. E. Mendra

INVENTOR

Joseph W. White

By H. T. Fisher ATTY

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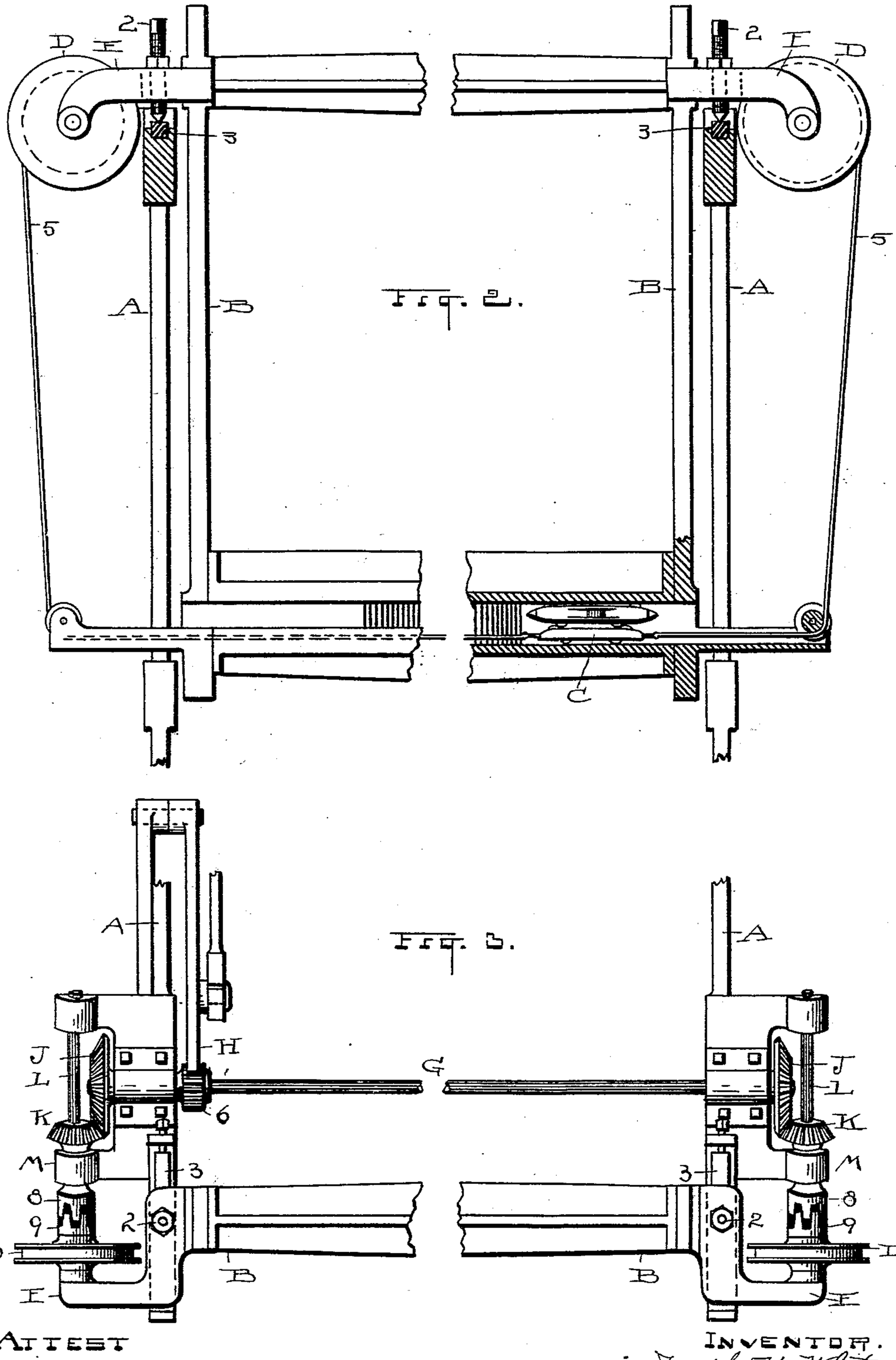

Fig. 2.

Fig. 3.

Attest

R. B. Moser.

H. E. Mudra

Inventor.

Joseph W. White

By H. J. Fisher Atty.

UNITED STATES PATENT OFFICE.

JOSEPH W. WHITE, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO W. S. TYLER, OF SAME PLACE.

WIRE-WEAVING LOOM AND SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 560,179, dated May 12, 1896.

Application filed October 9, 1895. Serial No. 565,144. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. WHITE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Wire-Weaving Looms and Shuttles; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to wire-weaving looms and shuttles; and the invention consists in the construction and combination of parts, substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of a portion of the loom-frame, showing the lay and its operating mechanism at one side thereon. Fig. 2 is a front elevation of the mechanism shown in Fig. 1, with some of the parts on sectional lines to reveal the construction more clearly. Fig. 3 is a plan view of mechanism seen in Figs. 1 and 2. Fig. 4 is a plan of the shuttle, taken on a horizontal line corresponding substantially to line 5 5, Fig. 5; and Fig. 5 is a section on line 6 6, Fig. 4.

A represents the frame of the loom, and B the lay. It will be seen that the lay is pivoted at its top by pivot-pins or screws 2 in suitable socket-bearings 3, so as to swing easily back and forth. This construction in itself is not claimed as new in this application, as I have shown and used it before.

C represents the shuttle-carrier, which is operated by mechanism at the top of the lay and the frame, as will now appear, and where I can obtain the easiest and quietest movement possible. By so locating shuttle-operating mechanism I can avail myself of the fact that at the pivot-point there is the least movement, and hence here I can make the most quiet engagement. In this instance the engagement is permanently made, and there is no disengaging and engaging alternately as there would be if said mechanism were below. To these ends I support a sheave D on a bracket E upon each side of the lay, and bring said bracket down in such position as to fetch the axis of the sheave D immediately opposite the bearing-point 3 of the lay and on which it swings to and fro. This sheave has a grooved periphery for the strap or cord 5, fixed thereto at one end, while the other end is fixed to shuttle-carrier C.

To actuate the sheaves D, I employ a shaft G, which is supported transversely on the top of frame A, and has a pinion 6, which is engaged by the power mechanism through vibrating segment H at one side of the frame. On each end of shaft G is a bevel-gear J, meshing with a bevel-gear K on short shaft L, supported on bracket M at the side of the frame. This shaft has a clutch 8 at its inner end, which engages with a clutch 9 on the sheave D, and these clutches have fingers which intermesh or lock, so as to be always in engagement for work, but yet are so loosely engaged that they will permit the comparatively small rocking movement which will occur in clutch 9, owing to the vibrations of the lay; but in any event this movement is not considerable and not such as to work disengagement of the clutches, even though the fingers or meshing projections thereof are relatively short. The advantage of this construction will be obvious, especially when we look at Fig. 1. Hitherto the sheave D has been supported on the frame A instead of on the lay, and hence when the lay swung back and forth it always operated with a torsional strain on the tape at the point where it first touches the sheave; but having the sheave vibrate with the lay the lay and tape move together and are always in the proper working relation.

The shuttle, as shown in Fig. 4, is intended to be used in a loom in which the spool is taken out at the side and is removable from the shuttle without taking the shuttle from the loom. I have found that it is a matter of very great convenience and economy of time to thus construct and operate a shuttle, and have simplified and improved the mechanism whereby this can be accomplished, as herein shown and described.

R represents the shuttle shell or frame rigid throughout and having a central chamber between its top and bottom sides 10 and 12, into which the spool and its supporting mechanism may be inserted and locked. I

have also found that it is desirable not only to remove the spool and its spindle together, but to have the spindle so supported as to make a support also for the spool when it is in hand. To this end I have made a disk-shaped or circular base 14, shown in this instance with a slight upwardly-extending flange 15, and of size about the flange to accommodate flange and spool, so that the flange and spool will come within the flange 15, and thus prevent the possible winding of the wire about the spindle beneath said flange. The spindle 16 stands centrally in this base 14 and is rigid therewith, the same as if it were made in the same piece with the said base. The spool is adapted to be sleeved upon this spindle and to operate while thereon in the usual way. The spindle and its base are bodily removable from the shuttle, and to this end the shuttle has a lip or projection 18 at one side of the spool-chamber, which is engaged by a tooth 19 on the spindle-base, and at the opposite side said base has another tooth or projection 20, engaged by a spring-latch 21, to hold the parts in working position. The edge of the shuttle beneath the base 14 is indicated in dotted lines in Fig. 4, and, as will be seen, is some distance back from the outer edge of said base. This enables a person to seize the base between the thumb and finger of one hand and to release the latch 21 with the other hand to remove the spool, and in like manner to replace it. When the parts are replaced, it is only necessary to insert the tooth 19 behind the catch 18 and carry them back into engagement on the opposite side with the latch 21, and then they are in working position and require no further locking or support. It will be noticed that the spindle 16 is flush with the inner surface of the top plate 10 of the shuttle, while the base 14 lies flat upon the lower plate 12 and the tooth 20 rests in a notch inside of the shuttle, so as to be firmly held there by the spring 21, thus making the entire arrangement complete and secure.

By the foregoing construction I get the advantage, among others, of making the spool removable from the shuttle without taking the shuttle out of the loom, as already described, thus requiring no handling of the shuttle itself when spools are changed and requiring only the removal of the spool-support with the spool, and either removing the empty spool and putting on a full one or replacing with a full spool and support together. This takes but an instant and involves no lifting or labor of consequence. Especially is there no handling of the shuttle.

What I claim is—

1. The loom described, having the lay pivoted at the top of the loom-frame, sheaves supported thereby opposite the pivot-points of the lay, drive mechanism for the sheaves, and clutches connecting said mechanism and sheaves, the shuttle-carrier and tapes connecting the sheaves with the shuttle-carrier, substantially as described.

2. The construction described, consisting of the loom-frame and the lay pivoted at its top on said frame, a sheave for operating the shuttle located on the outside of the lay at each side, and having a clutch member at its axis, in combination with drive mechanism supported on the loom-frame having a clutch member to engage the clutch member on the said sheave, substantially as described.

3. The shuttle-casing having a spool-chamber in its center open at its side and permanently closed over its top and bottom, in combination with a spool-support consisting of a disk-shaped base provided with opposite projections 19 and 20 at its edge to engage in said casing and hold said support in working position, and a spool-spindle rigid with the said base and constructed to carry a rotating spool, whereby the said base and spindle and the spool are removable together from the shuttle-casing without taking the shuttle out of the loom, substantially as described.

4. The shuttle described consisting of the casing thereof having a central chamber open at its side and provided with projection 18 at one side and edge of said chamber and a spring-catch 21 at the opposite side, in combination with the spool-supporting disk-shaped base having projections 19 and 20 at opposite points adapted to engage the projection 18 and the spring-catch 21 on the casing, respectively, and a spool-spindle fixed centrally upon said base and constructed to carry a rotating spool, substantially as described.

5. The shuttle-casing described, having a central spool-chamber closed at top and bottom and open at its side, in combination with the removable disk-shaped base having the spool-spindle fixed to its center, and means to lock said base in said casing, the said disk-shaped base projecting laterally outside of the top and bottom walls 10 and 12 of the spool-chamber, whereby the operator can lay hold of the edge of said base and bodily remove and replace the same with the spool and spindle, substantially as described.

Witness my hand to the foregoing specification on this 7th day of October, 1895.

JOSEPH W. WHITE.

Witnesses:
H. T. FISHER,
R. B. MOSER.