

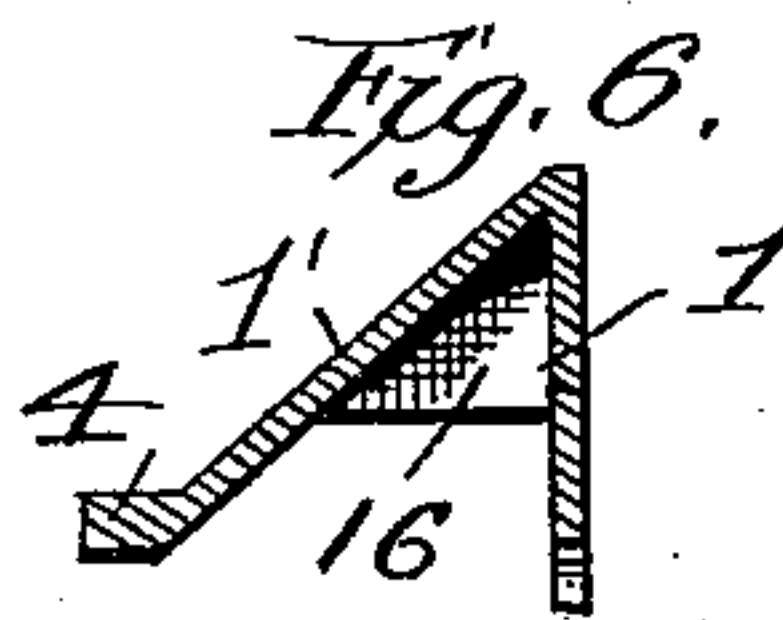
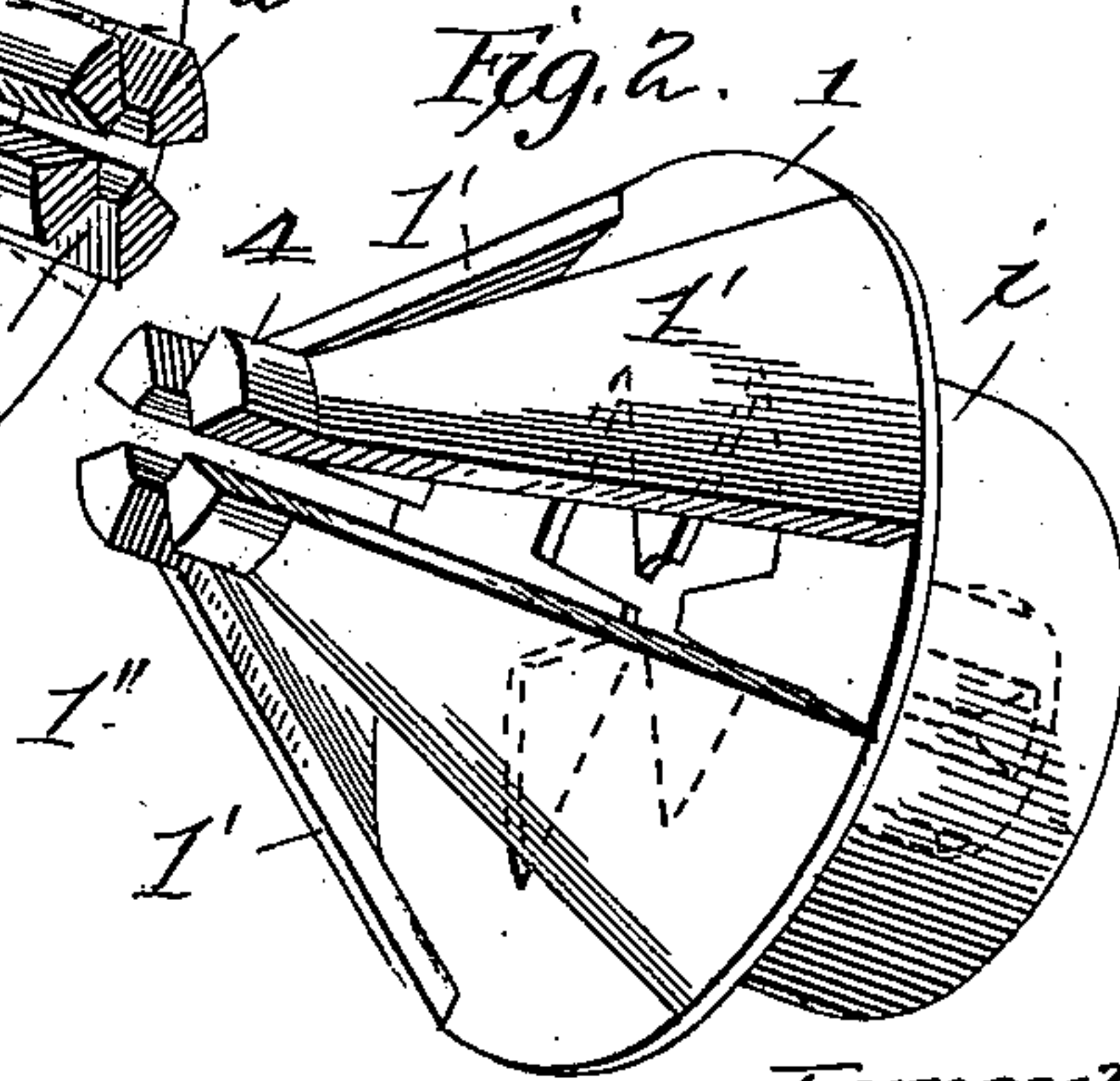
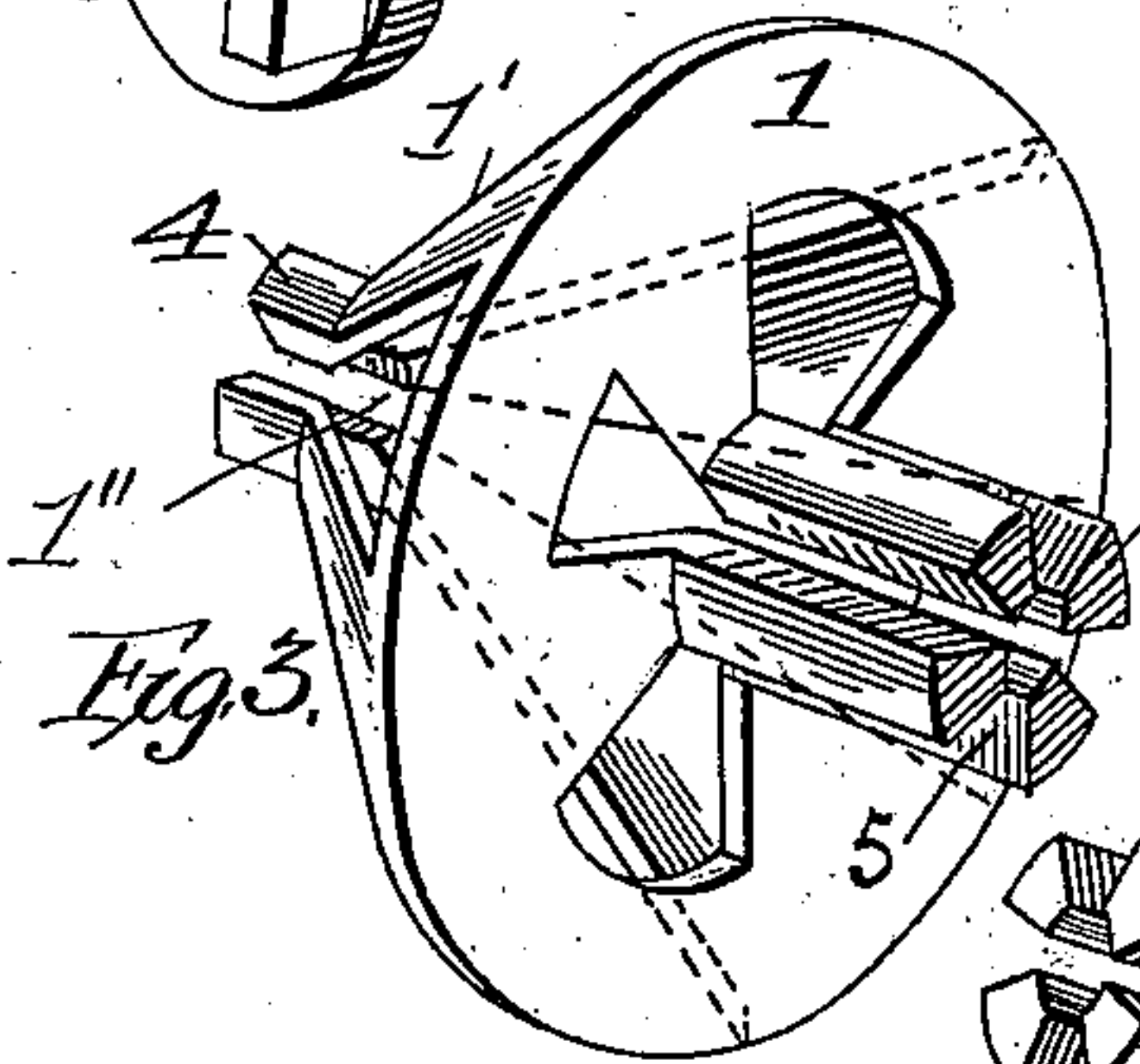
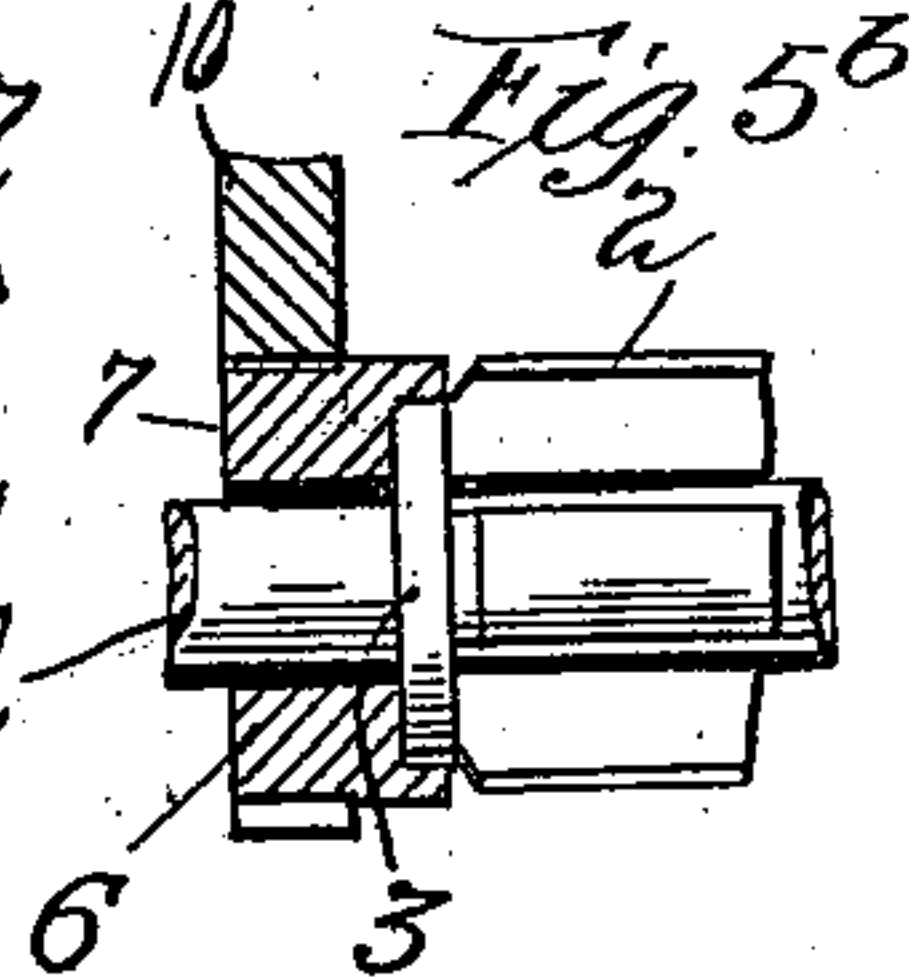
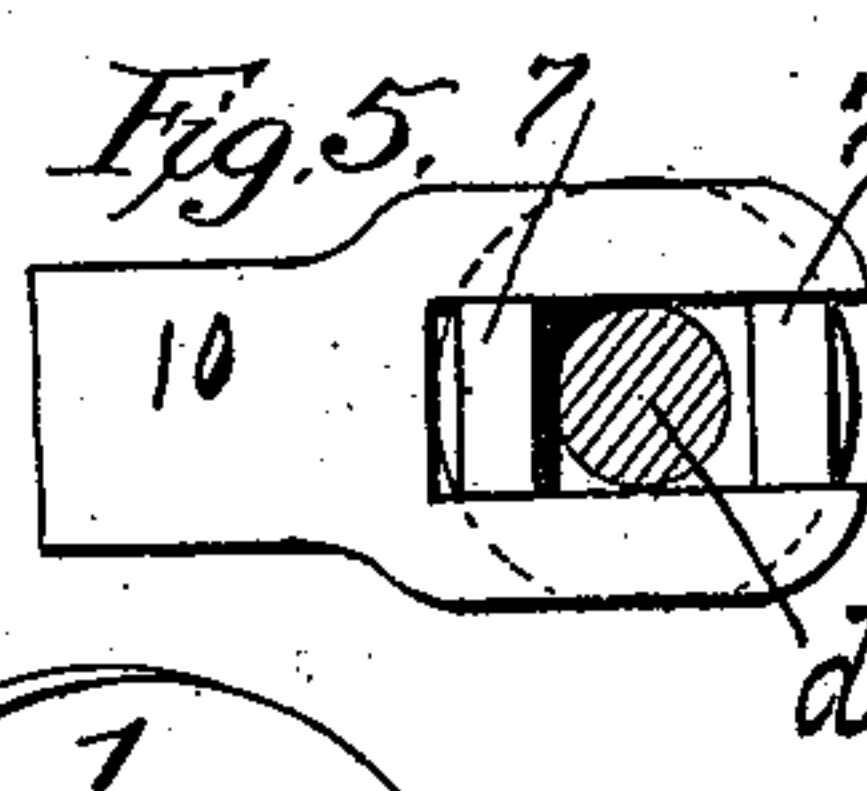
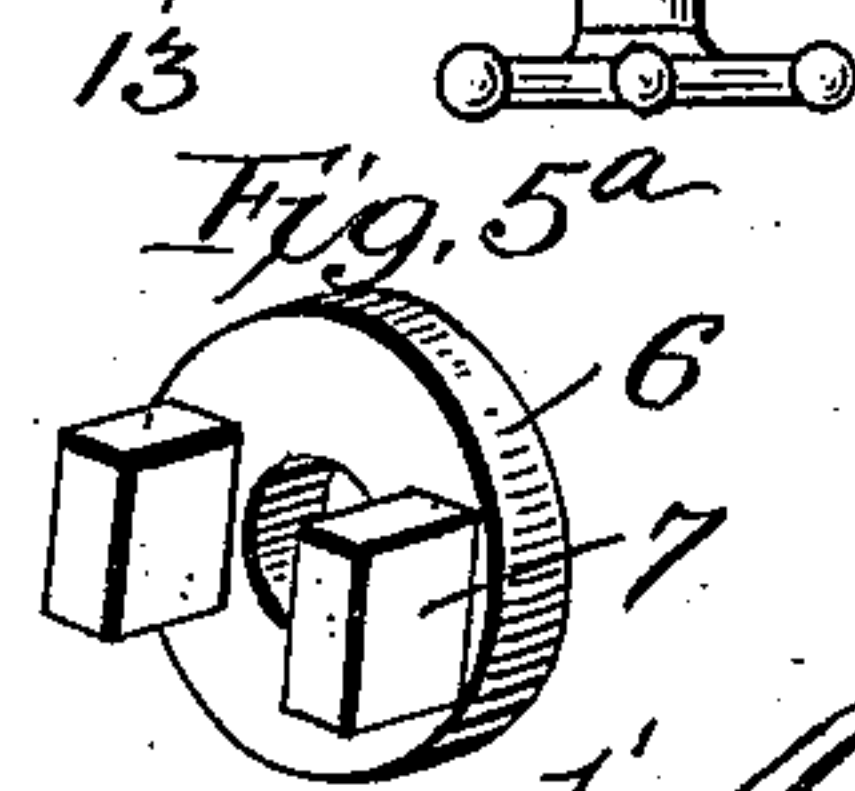
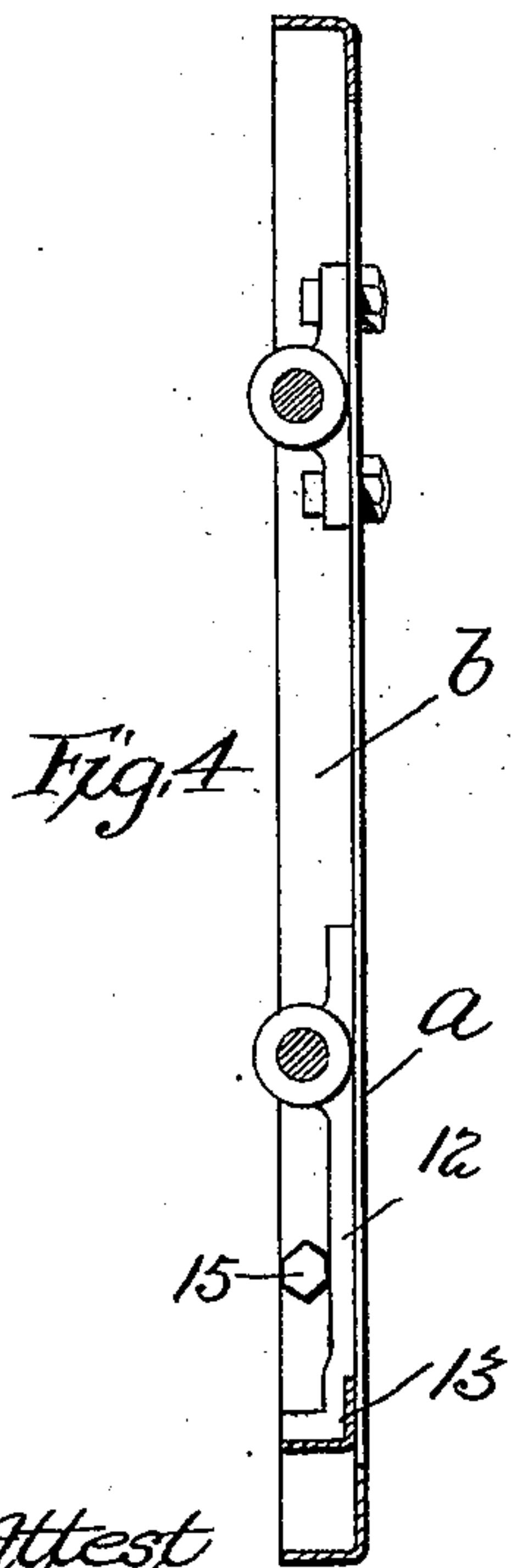
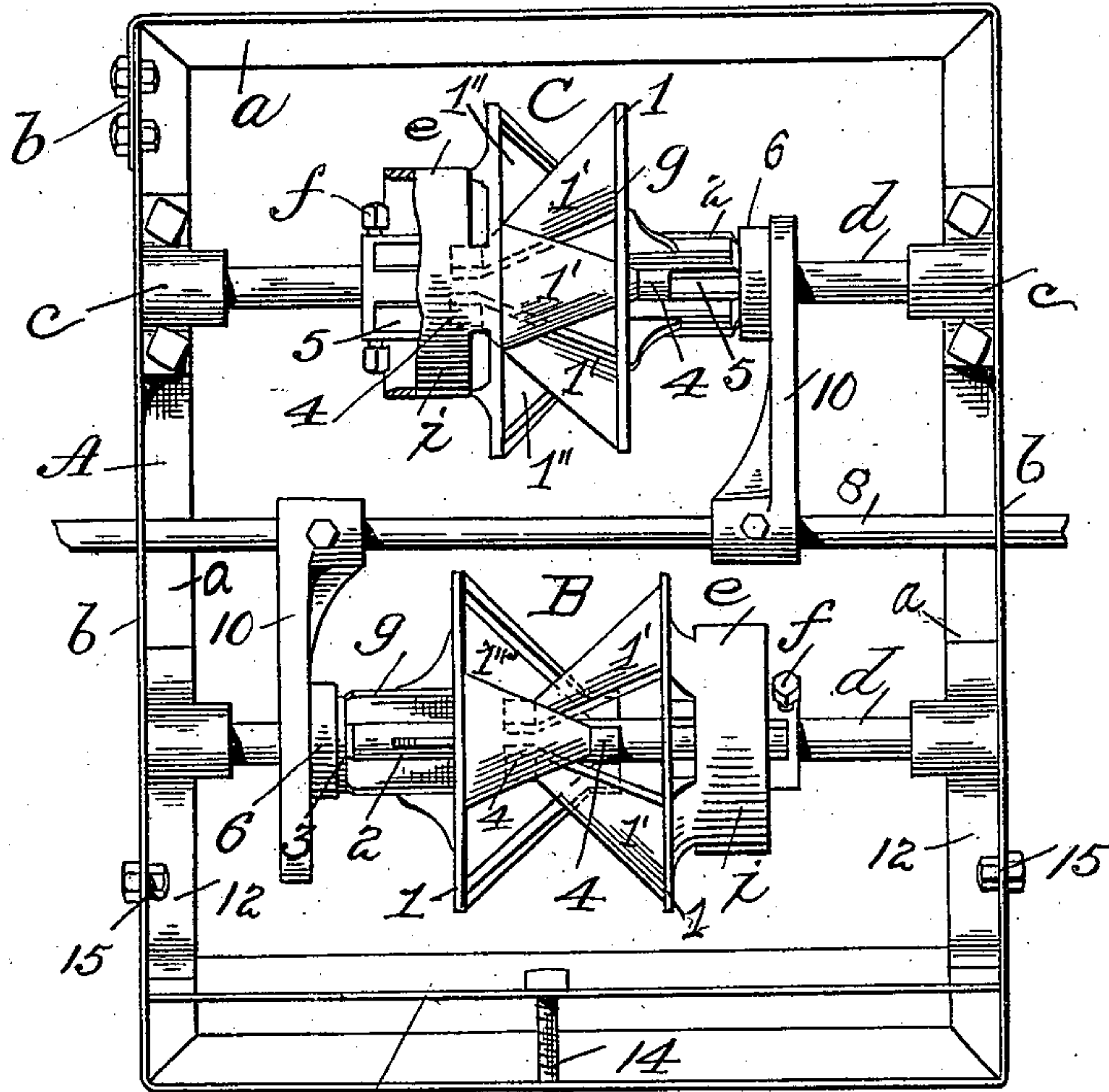
(No Model.)

W. M. McINTYRE.
SPEED PULLEY.

No. 562,234.

Patented June 16, 1896.

Fig. 1.



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UNITED STATES PATENT OFFICE.

WILLIAM M. MCINTYRE, OF EDGEWOOD PARK, PENNSYLVANIA.

SPEED-PULLEY.

SPECIFICATION forming part of Letters Patent No. 562,234, dated June 16, 1896.

Application filed December 13, 1895. Serial No. 572,058. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. MCINTYRE, residing at Edgewood Park, Allegheny county, Pennsylvania, have invented certain new and useful Improvements in Speed-Pulleys, of which the following is a specification.

My invention is a speed-pulley and is a development of the subject-matter of Letters Patent heretofore granted me on the 5th day of December, 1893, No. 510,283, and the 19th of February, 1895, No. 534,448, the former patent having been reissued on the 14th of May, 1895, No. 11,495.

The present improvements tend to simplify the general construction, to cheapen the cost, to reduce the weight, and to increase the efficiency of the device.

To this end my invention consists in the details of construction and in the arrangement of these details, as will be more fully hereinafter set forth.

In the accompanying drawings, I have illustrated the invention in front elevation in Figure 1, and in Figs. 2 and 3 I show perspective views of one of the pulleys from the inner and outer faces, respectively. Fig. 4 is a sectional view through the supporting-frame. Figs. 5, 5^a, and 5^b show details of the construction of the means for moving the slidable parts of the pulleys. Fig. 6 is a detail.

In the figures, the frame is represented at A, and is composed of a piece of angle-iron bent into rectangular shape, the flange *a* being cut away at the position of the corners, and being brought together at a bevel. At the extreme end at one corner, the flange *a* is removed entirely and the upright flange *b* laps the adjacent flange at the corner to which it is securely bolted. Thus a very simple construction of frame is provided of one piece having a supporting-flange *a* to which the bearings of the parts may be secured, and a projecting flange *b*, which strengthens the entire structure.

To the flange *a* the bearings *c* are bolted, and these bearings support a shaft *d*, extending between the bearings. This shaft carries a double pulley comprising one section *e*, secured to the shaft by a set-screw *f*, and a slidable section *g*, movable longitudinally of the shaft. These sections *e g* are of skeleton form and consist of an annular ring 1, termi-

nating in a hub 2, the hub being made up of a series of divided parts with spaces between them, and terminating at their extreme outer ends in a ring 3, which unites these divided parts. From the inner faces of the rings 1 extend cone-shaped plates 1', tapering inwardly and terminating in horizontal projections 4, which find a bearing on the shaft. Each ring 1, is provided with a like number of these cone-shaped tapering plates 1', and the plates on one ring alternate with the plates on the other and register with like spaces between adjacent plates, while the projections 4 register with the spaces 5 between the divisions of the hub. This general construction is shown in my former patent of February 19, 1895, but not the skeleton form of the rings and the cone-shaped tapering plates which greatly reduces the weight and materially increases the efficiency of the pulley.

A second double pulley is shown at B and is in all respects similar to the upper pulley C, just described, but is reversed in position, so that the fixed part *e* is upon the right-hand side of the frame and the slidable part upon the left-hand side, and it will be apparent that in changing the speed, as the slidable part of the lower pulley is moved in one direction, whether to increase or diminish the bearing-surface of its pulley, the slidable part of the upper pulley will be moved in the same direction and will correspondingly increase or diminish the surface of its pulley according to the direction of movement. The slidable parts are connected together so as to be moved at the same time, and in the same direction. As the cone-shaped tapering plates 1' interlock, it will be seen that a continuous bearing-surface is at all times provided, and as the movement of the slidable parts is uniform and simultaneous, the belt or strap between the pulleys is kept constantly centrally of the pulleys, and there can be no variation in the tension.

The fixed part of each pulley is provided with a band-wheel *i*, and one may receive power from the source of power, and the other communicate power to the machine to be driven.

I have provided a very simple arrangement for moving the oppositely-placed slidable parts of the pulleys, and incidental to the

arrangement I have devised a very simple connection between the moving parts or arms and the hubs of the slidable sections. As shown in Fig. 5^b, the ring 3 at the extreme end of the hub of the slidable section is reduced to enter a recessed cap 6, and this cap has projecting from its rear face two projections 7 on each side of the position of the shaft. A shifting-rod 8 passes through the flanges *b* of the frame and the end of the rod has a suitable connection with a shifting-lever, (not shown,) which may be of any ordinary or improved construction. Secured to this rod by set-screws are two arms 10, projecting in opposite directions, one extending to the hub of the slidable section of the upper pulley and the other to the slidable section of the lower pulley. These arms 10 are bifurcated and simply fit over the projections 7, and this completes the connection. The caps 6 simply serve as an intermediate means, for moving the slidable sections longitudinally, between said sections and the arms. In the shifting action of the rod 8 one of the arms has the effect of forcing inwardly the slidable section of its pulley, and this effect is communicated to the slidable section of the other pulley through the action of the belt pressing against the inclined face of the adjacent parts of the pulley.

In order to adjust the tension of the belt, I have provided a very simple form of tension device consisting of side pieces 12, resting on the flanges *a*, and having the bearings of the lower shaft formed integral therewith or secured thereto. The side pieces are connected at their lower ends by an angle-plate 13, and a threaded bolt 14, with a hand-wheel fitted thereto, extends from the angle-plate 13 through the lower flange of the frame, and thus the pulleys may be adjusted a distance apart in order to put a proper tension upon the belt connecting them. The bifurcated construction of the arms 10 permits of this adjustment. The side plates 12 and connecting-plate 13 form a supplemental frame which is held in place by simply passing two bolts 15 through the flanges *b* above the side plates 12.

In Fig. 6 I show a section of one of the cone-shaped tapering plates strengthened by a web 16, this construction being desirable when large pulleys are used for heavy work.

It will be understood that the variable speed may be communicated to the machines to be operated through any desired arrangement of flat pulleys.

I claim—

1. A speed-pulley consisting of two interlocking skeleton sections, each of said sections comprising an elongated hub having a series of recesses extending lengthwise thereof, a ring extending from the front of each hub and a series of inclined tapering segments in each ring alternating in position, the lower ends of the segments fitting the recesses in the hub, substantially as described.

2. A speed-varying device consisting of two pulleys each comprising two interlocking sections, one stationary and the other slidable, a movable frame supporting one pulley, arms for moving the slidable sections longitudinally, one of said arms being bifurcated and having a loose connection with the slidable section to permit of the adjustment of the supplemental frame, substantially as described.

3. In combination, the main frame, the supplemental adjustable frame, a pulley carried by each of said frames comprising a stationary and slidable section, arms for moving said slidable sections, the connection between the arms and sections including a cap loosely fitted to the end of the hub of the slidable section, and projections 7 on said cap fitting the bifurcated end of the arm, substantially as described.

4. In combination, a frame made up of angle-iron, a shaft having its bearings secured to one of the flanges, a supplemental frame composed of side plates and carrying bearings for a second shaft, and a connection between them, supported on the flange, retaining-bolts passing through the flanges *b* above the side plates, and means for adjusting the supplemental frame, substantially as described.

5. A speed-varying device consisting of a main frame, a pulley carried thereby, comprising two interlocking sections one stationary and the other slidable, a supplemental frame carrying a like pulley, and movable in relation to the main frame, arms for moving the slidable sections and an extensible connection between one of said arms and the slidable section carried by the supplemental frame whereby the adjustment of said frame is permitted without disconnection of the parts, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM M. MCINTYRE.

Witnesses:

JNO. KENNEDY,
JESS. E. HILL.