

## NEW MOTION PICTURE APPARATUS

### THE ROTAMBULATOR—A NEW MOTION PICTURE CAMERA STAND\*

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Modern Motion Picture production has developed an interesting technic which, though not entirely new, is now applied to such an extent that it has required the development of new apparatus to assure perfection of execution and rapidity of manipulation. In 1910 or 1911, the Italian producer of *Cabiria*



FIG. 1. The Rotambulator, showing highest position.

conceived the idea of replacing the stereotyped system of cutting from long shots to close-ups with the perambulating of the camera toward the action that was to be emphasized.

All who saw the picture marveled at it then, and still remember today the

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theretofore unknown sense of continuity of action that resulted and the sense of intimacy that was conveyed by that relatively simple trick. It was only around 1926 that German producers revived the idea and elaborated it with such astounding results that American producers fell in line and the camera began to travel about the sets, at times, perhaps, with exaggeration, but most of the time maintaining a very effective continuity of action and a sustained interest in the story.

At the time that recorded speech became an essential part of motion pictures, the new technic proved invaluable as a means of sustaining the tempo of the action which the spoken word had a tendency to slacken. Expedients were resorted to and the camera was set on rude perambulating platforms improvised

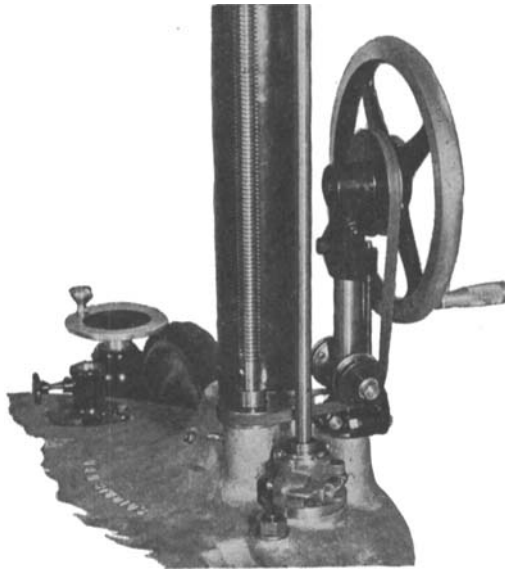


FIG. 2. The elevating mechanism.

according to the needs of each individual scene. Little by little, with the designing of more efficient rolling tripods, the perambulating camera had to evolve means for controlling the technic involved in its motion, with the result that special "follow focus" devices and special self-adjusting finders were added to it. The increasing complexity of camera motion brought forth the building of cranes, some of them mastodonic, some of less bulk and more easily manipulated.

At that time the Bell & Howell Company considered the advisability of constructing a camera stand for practical every-day use—one that would permit with ease the simultaneous use of the four elements of camera motion. These are, disregarding any attempt of having the camera perform acrobatic tricks: perambulating, panning, tilting, and elevating or lowering. Such a piece of equip-

ment was considered highly desirable also because the bulk and weight of the camera "blimps," now in use, made every camera "set-up" a matter of brawn rather than brain unless facilities were given the cinematographer to set his camera easily and quickly at the proper distance and height.

The *Rotambulator*, illustrated in Figs. 1 and 5, consists of a three-wheeled undercarriage on which rests a rotating platform. A strong upright holds the camera platform and the elevating and tilting devices. Both panning and tilting are accomplished by the cameraman from a seat which is an integral part of the panning platform, so that his position in relation to the camera is always the same irrespective of panning and perambulating.

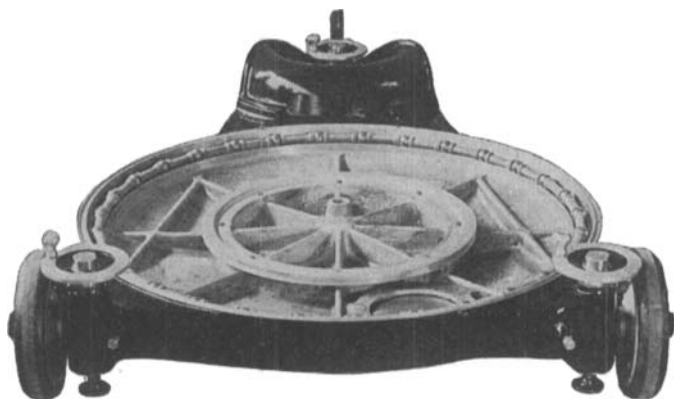


FIG. 3. The base, showing the large pulley for the panning drive and the large ball race.

Fig. 1 shows the general appearance of the apparatus with the camera platform at its highest level. The main dimensions are as follows:

Over-all height	90 in. (7 ft. 6 in.)
Over-all length	62 <sup>3</sup> / <sub>4</sub> in. (5 ft. 2 <sup>3</sup> / <sub>4</sub> in.)
Over-all width	46 <sup>3</sup> / <sub>4</sub> in. (3 ft. 10 <sup>3</sup> / <sub>4</sub> in.)
Max. height of camera table	71 <sup>3</sup> / <sub>4</sub> in. (5 ft. 11 <sup>3</sup> / <sub>4</sub> in.)
Min. height of camera table with panning wheel attached	16 in. (1 ft. 4 in.)
Min. height of camera table with panning wheel removed	12 <sup>3</sup> / <sub>4</sub> in. (1 ft. <sup>3</sup> / <sub>4</sub> in.)
Diameter of rotary platform	42 in. (3 ft. 6 in.)
Size of camera table	13 <sup>1</sup> / <sub>4</sub> in. × 13 <sup>7</sup> / <sub>8</sub> in.
Max. height of seat	39 <sup>3</sup> / <sub>4</sub> in. (3 ft. 3 <sup>3</sup> / <sub>4</sub> in.)
Min. height of seat	31 <sup>3</sup> / <sub>4</sub> in. (2 ft. 7 <sup>3</sup> / <sub>4</sub> in.)
Height of standing platform	21 in. (1 ft. 9 in.)
Net weight	700 pounds

When the camera is set at such height that it is difficult for the operator to follow the action through the finder, the seat is replaced by a lower platform on which he can stand, bringing his eyes to the level of the finder.

The elevating mechanism is illustrated in Fig. 2. Through a crank and pulleys

linked by a belt, the elevating screw is made to rotate at a ratio of five turns for three complete turns of the crank. The screw acts upon a nut in the camera platform housing, raising, or lowering it one foot for every 36 turns of the crank.

A great deal of thought has been given to determining the elevating speed, experience having taught that it would be mostly used for rapidly setting the camera at the proper height and seldom for the purpose of achieving the effect of changing elevation while the camera is operating. That can, however, be done, and again experience has proved that a greater or lesser elevating or descending speed would not be conducive to any better results.

The panning crank is in easy reach of the operator at the left of the camera platform. It operates through two beveled gears which rotate an upright and a

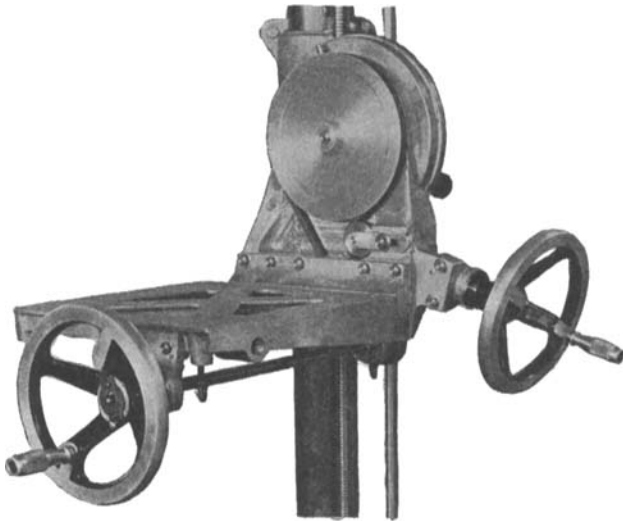


FIG. 4. The camera platform and the panning and tilting controls.

pulley located within the base which is in turn linked by a belt to another pulley, shown in Fig. 3. The smoothness of the panning operation is attained through proper tension of the belt and the possibility of adjusting it, and through a large ball race as shown in Fig. 3.

The tilting mechanism is easily controlled by the right hand of the operator, and consists of a worm and worm gear which control the motion of a system of pulleys and an adjustable belt shown in Fig. 4. Ball races of generous diameter assure smoothness of motion and a good balance against the considerable weight of a camera enclosed in a blimp (from 300 to 500 pounds). The camera platform is a separate unit solidly anchored to the tilting system. Its design can be altered to accommodate blimps of any design.

Both the panning and tilting devices can be disengaged; the first by releasing a clutch; the second by opening a lock, thus idling the gears so that the apparatus

can be used in the same manner as a "free tripod head," in which case, however, the operator must work from the floor and sacrifice the convenience of the seat.

The undercarriage forms a solid triangular base of such width and length as to assure rigidity of the apparatus even when the camera is at the maximum height. The carriage is mounted on four rubber rimmed wheels mounted on ball bearings and perfectly aligned to insure smoothness of running. An operator perambulates the apparatus by means of a tongue handle, the two wheels at the apex of the triangle being mounted on a swivel carriage. Three jacks permit

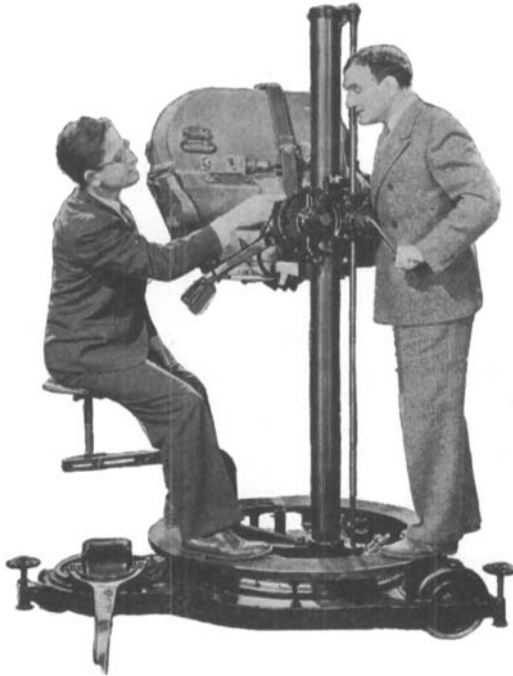


FIG. 5. The Rotambulator in use at the M-G-M Studio.

stabilization of the machine for stationary "shots" and also leveling in case of slight unevenness of the floor.

Among the details of construction, the following are worthy of mention: the camera platform is so located that in the panning operation the axis of revolution is as close as possible to the photographic lens, depending upon the design of the blimp. The cameraman's seat is adjustable so that the operator can place it in the most comfortable position. Sockets are made part of the rotating platform so that additional seats or lighting equipment can be fastened to the apparatus.

The other type of *Rotambulator* is illustrated in Fig. 5, where it is shown with the camera blimp in position, and cameraman William Daniels and Director

Edgar Selwyn at the controls. The principal difference between this design and the one described above consists in the method of controlling the tilting and panning arrangements. Gears, pulleys, and belts are eliminated, smoothness of operation being attained by controlling the mechanism through oil feeds. The tilting handle is simply moved up or down according to the requirements, and a slight pressure on a trigger which is integral part of the handle releases a stout brake which otherwise holds the tilting device locked in position.

The panning arrangement is novel in that it is operated by a slight pressure of the operator's foot on a stationary circular platform independent of the rotating platform on which the camera standard is mounted. This method offers the advantage of freeing the left hand of the operator.