June 27, 1944. H. L. PHILLIPS 2,352,221

PHOTOGRAPHIC STAND

Filed June 2, 1943 3 Sheets-Sheet 1

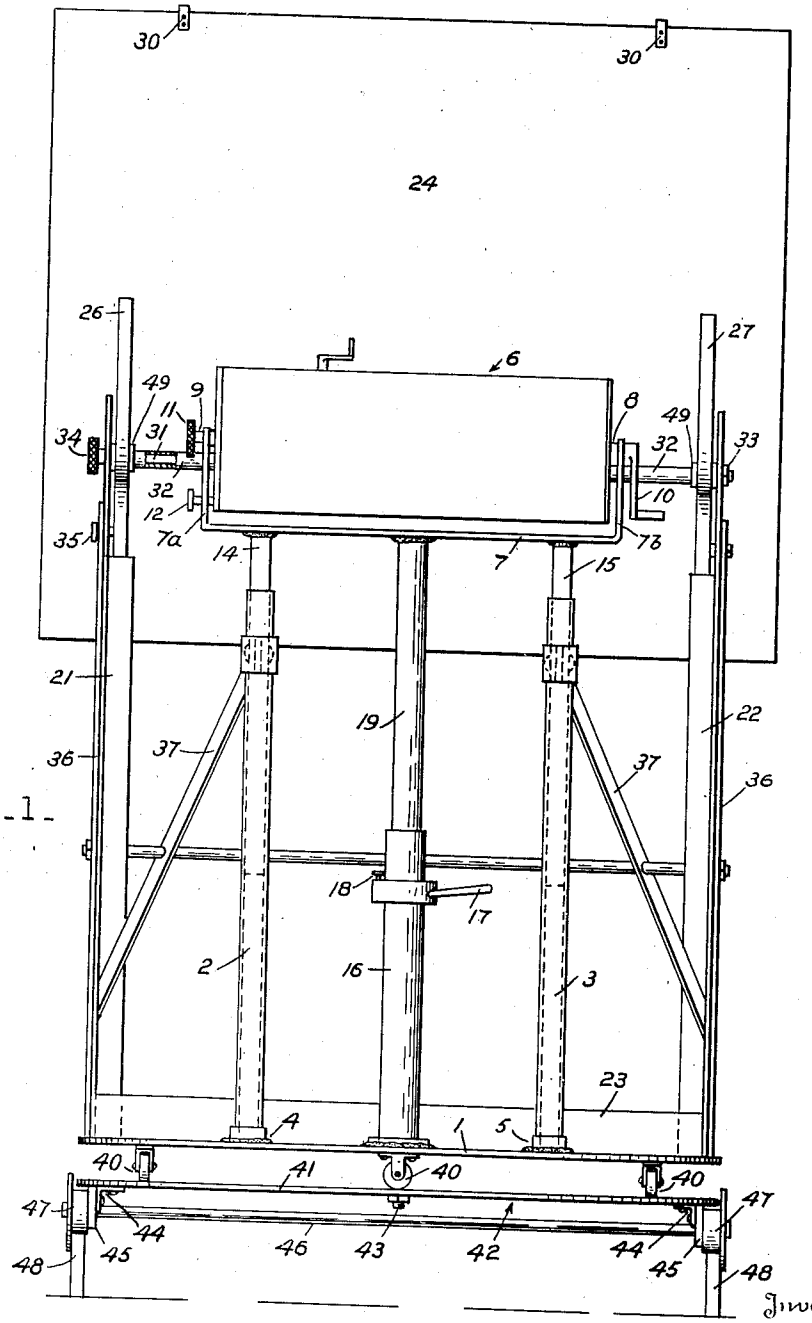


Fig. 1.

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Fig. 2.

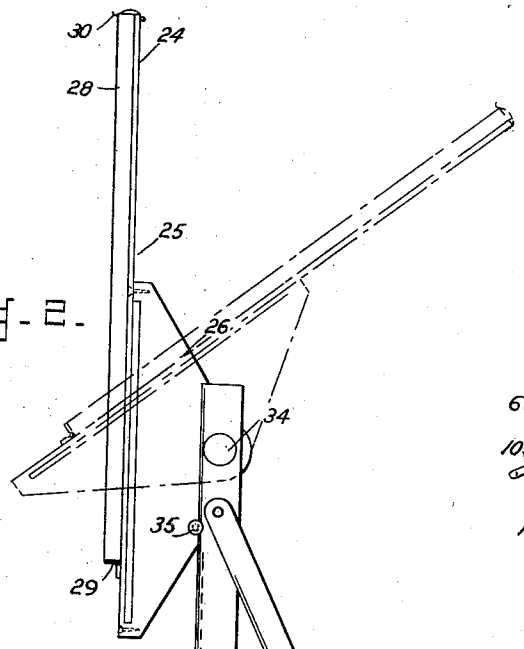
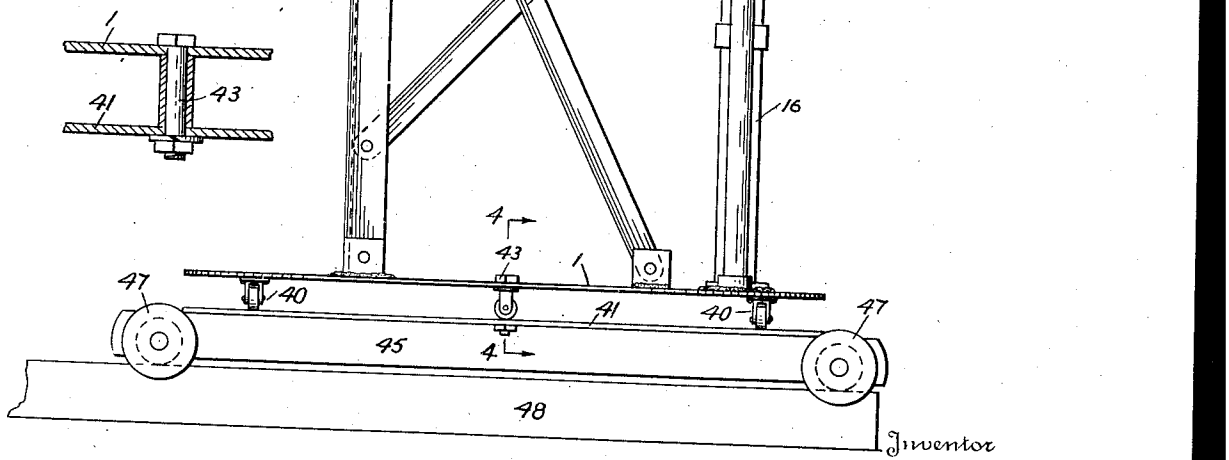


Fig. 4.



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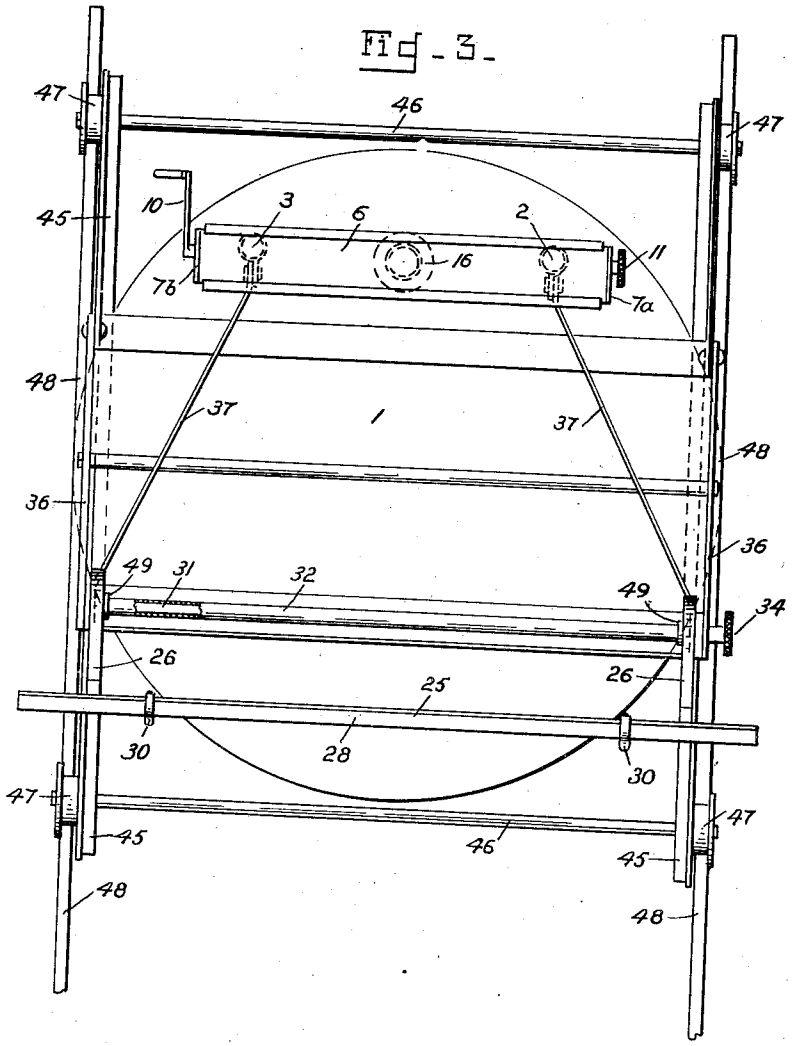
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Fig. 3.



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UNITED STATES PATENT OFFICE

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PHOTOGRAPHIC STAND

Herbert L. Phillips, Watertown, Mass.

Application June 2, 1943, Serial No. 489,355

4 Claims. (Cl. 88—24)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a combination copying and specimen holding stand for photographic use.

Photographing certain objects of steel, particularly metallurgical specimens, with a horizontal camera is a tedious, time consuming procedure because of the difficulty encountered in making a suitable set-up. The specimen must be carefully supported on its side and if a plurality of specimens are to be photographed simultaneously they must be carefully supported on top of each other by props and then the props masked out. Where the studio has in addition considerable copying of drawings and other prints with the same horizontal camera, considerable inconvenience and loss of time is experienced because of entirely different set-ups necessitated by photographing this work of an entirely different character. If a combination stand which comprises a copying frame and a rapid set-up holder for small steel specimens could be provided much time could be saved.

Accordingly, it is an object of this invention to provide a combination photographic stand having both a copying frame and a specimen holder for alternate use with the same camera.

A particular object of this invention is to provide a specimen holder on which iron or steel specimens may be rapidly mounted for photographing by a horizontal camera.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawings in which:

Fig. 1 is a front elevational view of the combination stand.

Fig. 2 is a left side elevational view of the combination stand as viewed in Fig. 1.

Fig. 3 is a top elevational view of Fig. 1.

Fig. 4 is an enlarged partial cross sectional view taken along the plane 4—4 of Fig. 2 showing the method of rotatably securing the turntable to the base.

In the accompanying figures wherein like characters refer to similar parts there is shown a circular turn table 1. Two upright tubular supports 2 and 3 are secured near one edge of turn table 1 by welding or by suitably fastened pipe flanges 4 and 5. A magnetic chuck 6 of the type commonly used on surface grinders and having a flat active surface 6a is pivotally supported by a yoke 7. The yoke 7 having upstanding arms 7a and 7b may be made of suitable strap material bent into a broad U-shape as shown in Fig. 1. Fixed threaded studs 8 and 9 centrally located at each end of magnetic chuck 6 are provided for pivotally mounting the chuck 6 in the yoke 7. Each stud 8 and 9 projects through suitable holes in the upstanding arms 7a and 7b of the yoke 7. A crank 10 is securely fastened to the stud 8 on the outside of the arm 7b. On the stud outside of the arm 7a a binding nut 11 is provided to lock the magnetic chuck 6 in any desired position in the yoke 7. The crank 10 permits manual rotation of the magnetic chuck 6 to such position. Additional clamping means is provided by a winged bolt 12 which engages a slot 13 in the arm 7a and engages a suitably threaded hole in magnetic chuck 6. It should be understood that the magnetic chuck may be either the permanent magnet or electromagnetic type.

Guide members 14 and 15 are secured to the bottom of yoke 7 as by welding and are so positioned that they will slidably engage the tubular supports 2 and 3. The guide members 14 and 15 are then inserted in the tubular supports 2 and 3. For ease and convenience in raising the magnetic chuck 6 to any desired height, a hydraulic lift 16 is provided. For the hydraulic lift 16 any hydraulic jack of the type used for automobiles may be utilized. If desired the lift 16 may be removably secured to the turn table 1 and to yoke 7 to provide a readily replaceable unit. A lever 17 is provided to actuate the hydraulic lift 16 and a valve 18 is provided to release the lift for lowering the chuck 6. The piston 19 of the conventional lift 16 may be lengthened to obtain the maximum height of chuck 6 desired. It is thus apparent that by the use of the hydraulic lift 16 the magnetic chuck 6 may be easily and conveniently raised to any vertical position desired within the limit of extension of the hydraulic lift.

Opposite the supports 2 and 3 and in a plane parallel to those supports there are provided two other upstanding supports 21 and 22. The supports 21 and 22 are preferably formed from angle iron and are secured to a stiffening member 23 preferably by welding. The supports 21 and 22 are slightly higher than the lowest position of the magnetic chuck 6. A copying easel 24 is pivotally mounted between the upright supports 21 and 22. The easel 24 comprises a backing board 25 which is secured to brackets 26 and 27 by suitable screws. A conventional copying frame 28 is mounted on the front of backing board 25 by a long piano type hinge 29 and is fastened at its upper edge by two spring catches 30. A long rod 31 threaded at each end is placed near the top of the upright supports 21 and 22 in suitable holes for pivotally mounting the easel 24. A pipe spacer 32 is placed over the rod 31 and between the brackets 26 and 27. Suitable washers 49 are provided adjacent each side of brackets 26 and 27. On one end of rod 31 there is provided a

nut 33 suitably secured against turning while on the other end of rod 31 a knurled locking nut 34 is provided. By tightening the locking nut 34 the easel 24 may be secured in any position desired. However, as it is generally necessary to use the easel in a plane perpendicular to the horizontal axis of the optical center of the horizontal camera lens a suitable stop 35, which may be a short bolt-like member, is secured to bracket 26 so that when the easel is tilted upwardly until stop 35 strikes the support 21 the easel will be in a vertical position. For placing copy in the copying frame 28 the easel may be lowered to a horizontal position where it will rest on the magnetic chuck which in its lowest position serves as a suitable stop. Thus it will be readily seen that copy may be very conveniently placed within the copying frame prior to raising the frame to the working position.

The upright supports 2, 3, 21, and 22 are further supported for rigidity by cross braces 36 and 37 provided on opposite ends of the combination stand. The turn table 1 is mounted on three evenly spaced casters 40. The casters 40 in turn rest on a circular base 41 of a carriage 42. A bolt 43 (Fig. 4) passing through the centers of turn table 1 and the base 41 is secured in such a manner as to permit only rotational movement of turn table 1 about base 41. Carriage 42 comprises the base 41, to which there are secured by parallel angle irons 44, two parallel axle supports 45 mounted perpendicularly to base 41. The angle irons 44 which support the members 45 are preferably welded to the base 41 and the supports 45. Mounted near the ends of support members 45 are two axles 46. Flanged wheels 47 are provided on each end of axles 46 and are suitably secured thereto. The flanged wheels 47 are placed upon two parallel rails 48, which may be of any convenient length, and from the bed for the combination stand and camera carriage. Thus with the combination stand so mounted it is a relatively easy procedure to bring the subject matter on the stand to be photographed within focusing range of a fixed position horizontal camera by merely rolling the stand along the rails 48.

To photograph any iron or steel specimen capable of being held by the particular magnetic chuck 6 utilized, the object has merely to be located on the face 6a of the magnetic chuck while such face is in a horizontal plane where it will be held by the magnetic forces of the magnet. It should be mentioned here that by suitable steel adapters other non-metallic objects may be conveniently held on the magnetic chuck. A sheet of white paper inserted between the specimen and the chuck face provides a fine background. The chuck is then pivoted so that the face 6a is vertical and is clamped in such position by screws 11 and 12. The object held by the magnetic chuck may be quickly and conveniently raised to the optical center of the camera lens by means of the hydraulic lift 16 which raises the magnetic chuck 6 to the proper height. If it is desired to change the plane of the magnetic chuck from the perpendicular to any other position in order to bring out more detail in the specimen being photographed, it is only necessary to unloosen the binding screws 11 and 12 and then turn the magnetic chuck by means of the crank 10 to the desired position and then again clamp the binding screws 11 and 12.

Focusing the camera is greatly facilitated because the combination stand is mounted on rails. Thus the stand can be readily moved nearer or farther away from a fixed camera until the image to be photographed comes roughly into focus on the ground glass of the camera. Finer focusing adjustments can then be made on the camera itself. To use the copying stand, the combination stand is rotated 180° on its axis about the camera until the easel is at right angles to the optical center of the camera lens. Copy placed in the copying frame of the easel is then photographed in much the same manner as photographing a specimen attached to the magnetic chuck. The same adjustments may be made for the easel 24 as for the magnetic chuck if desired. It should be noted that a set-up on the magnetic chuck need not be disturbed if it is necessary to do a rush job on the copying stand or vice versa.

I claim:

1. A combination photographic stand comprising a base, a platform rotatably mounted on said base for movement about a vertical axis, a magnetic member pivotally mounted on one side of said platform for movement about a horizontal axis, said magnetic member having at least one planar holding surface, and a copying frame pivotally mounted on the other side of said platform for movement about a horizontal axis whereby rotation of the platform on the base will successively bring said chuck and said copying frame into the sighting axis of a camera.

2. A combination photographic stand comprising a base, a platform rotatably mounted on said base for movement about a vertical axis, a magnetic chuck, means mounting said chuck on one side of said platform for pivotal movement about a horizontal axis, means for securing said chuck in any desired pivotal position, means for varying the vertical position of said chuck with respect to said platform, a copying frame, and means for mounting said frame on the opposite side of said platform for pivotal movement about a horizontal axis.

3. A photographic stand for magnetic specimens comprising a base, a platform rotatably mounted on said base for movement about a horizontal axis, a yoke member supported on said platform, means for positioning said yoke member in a plurality of vertical positions with respect to said platform, a magnetic chuck pivotally mounted on said yoke member for movement about a horizontal axis, and means for securing said chuck in any desired pivotal position with respect to said yoke.

4. A combination photographic stand comprising a base, a platform rotatably mounted on said base for movement about a vertical axis, a yoke member supported on one side of said platform, means for positioning said yoke member in a plurality of vertical positions with respect to said platform, a magnetic chuck pivotally mounted on said yoke member for movement about a horizontal axis, means for securing said chuck in any desired pivotal position, means for varying the vertical position of said chuck with respect to said platform, a copying frame, and means for mounting said frame on the opposite side of said platform for pivotal movement about a horizontal axis.

HERBERT L. PHILLIPS.